The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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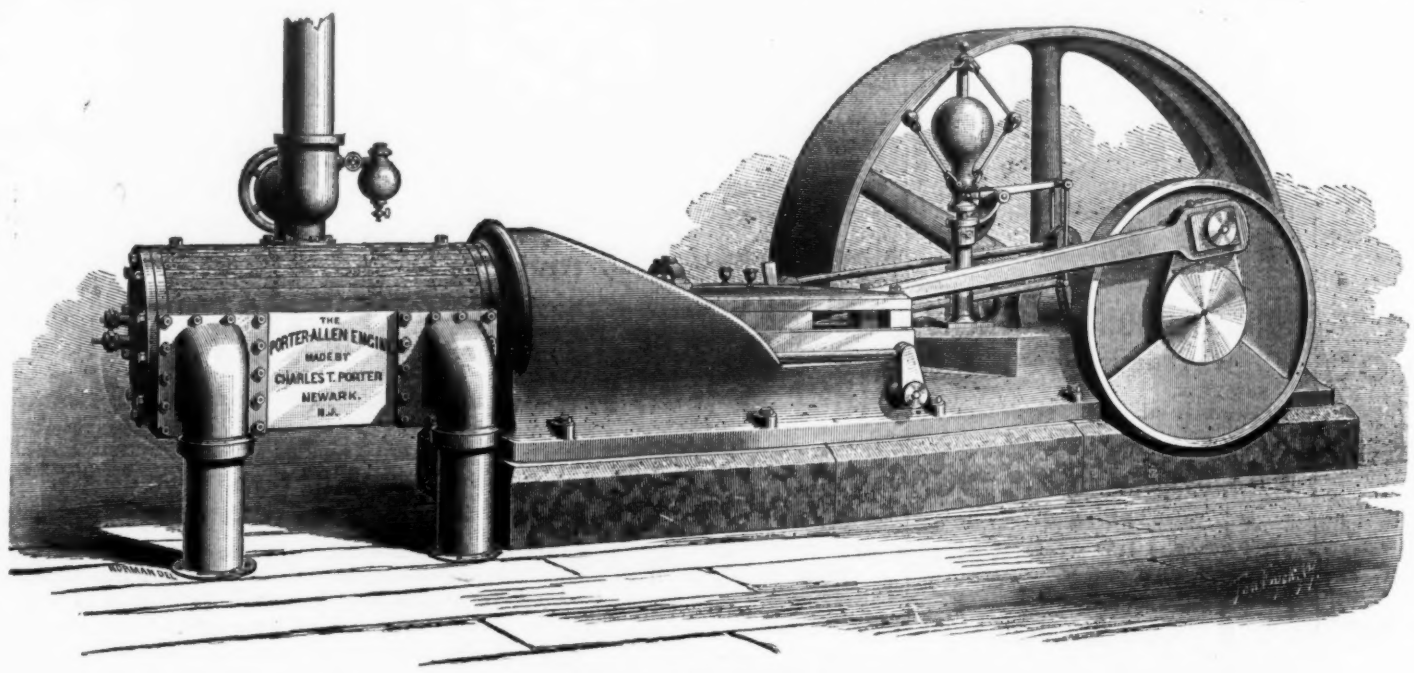
The Porter-Allen Engine.

We present herewith a front view of the Porter-Allen engine, manufactured by Mr. Charles T. Porter, of Newark, N. J. This engine is producing a revolution so far reaching in its results that we are hardly able to estimate their importance. It is now about 18 years since Mr. Porter became impressed with the value of the system of valves and valve gear for steam engines, then recently invented by Mr. John F. Allen, of New York, and with their perfect adaptation to high piston speeds in engines with a moderate length of stroke. With an earnestness of purpose and a courage which was almost unparalleled, he boldly undertook the task of changing the usuage of the world in regard to the speed of engines, and actually produced what all engineers regarded as impossible, a successful high-speed engine. It is difficult for an engineer brought up in the present school and accustomed to deal habitually with machinery running at speeds once deemed impracticable, to realize how many and how difficult were the problems to be solved before such an engine could be produced. Many of the obstacles were entirely unknown, and were only discovered when the attempt had been made. Balancing, lubrication and wear in turn made themselves felt as almost insurmountable obstacles to the success of the attempt. The problem of a high-speed engine, never for a moment abandoned, was at last solved. The workmanship was beautiful certainly; nothing equal to it had ever been put upon the American market. Perhaps the most remarkable feature of this engine was that even the early productions have "stood up to their work" with a durability and exemption from the accidents of use only equaled by the slow-moving beam engine which tradition says never wears out.



THE PORTER-ALLEN ENGINE.

We recently had occasion to examine several of these engines, and in one instance had the opportunity of indicating the engine with considerable care. One of these engines with an 18x30-inch cylinder making 147 revolutions per minute, is driving the works of the Newark Lime and Cement Manufacturing Co. Another with an 8-inch cylinder and 16 inches stroke, making 220 revolutions per minute, is at work in the tobacco factory of H. P. Hoyt & Co., 404 Pearl street, in this city, and has been in constant use for 7 or 8 years. We know of another, driving the works of the Jackson & Sharp Company of Wilmington, Del., which we think must have been at work 8 or 10 years. This engine was put up by Mr. Auchincloss, whose work on the valve and link motion is well known. In a conversation with the writer some years since he spoke in the highest terms of the engine's performance. Among the engines which we have examined was one with a 6 by 12 cylinder, making 350 revolutions per minute, in the factory of Andrew Albright, in Newark. This has been at work for a year and a half, a comparatively short time, but so far there has been no sensible wear. In overhauling one of these engines last summer, after it had been at work for seven years, the engineer remarked that there was nothing to be done to it. There has in that time been no expenditure for repairs of any kind. At first glance it seems strange that an engine using high pressures and running at speeds not often exceeded by locomotives, should run for years without perceptible signs of wear, but when the sizes of the bearings, the pressures put upon them and the speeds at which they move are all computed, the wonder ceases. For example, in some engines of quite moderate size we have seen pistons of over 200 pounds weight. The question naturally arose as to what the consequent wear would be. Upon figuring it out we that the resulting pressure is barely 4 pounds per square inch, an amount too small to be noted. So with most of the many surfaces, their area being so great the wear is necessarily nominal. In addition to this all the pins and journals are ground until true, and have their surfaces of spring or other tempering steel as hard as fire and water will make them. All the plain surfaces are scraped until they are perfectly true and will make steam-tight joints metal to metal. Under such conditions of workmanship wear is scarcely noticeable.

We have been much interested in the relative economy of the two classes of engines, high and low speed. The high-speed engine has two advantages in this respect. The first is that the steam in the waste room reaches a higher pressure with a given amount of compression than can be attained in a slow-moving engine. This is illustrated in the accompanying indicator card, Fig. 1, taken by ourselves from Mr. Albright's engine at a speed of 350 revolutions. The card is a *fac simile* of the original. The rise of the compression curve in a slow-moving engine is less abrupt because of the rapid absorption of heat from the steam and the consequent lower pressure. In other words, the heat which would escape in a slow-moving engine into the walls of the cylinder, piston, &c., makes its appearance as sensible heat in the steam, and is accompanied with a coresponding rise in the pressure. The second and chief advantage is that, other conditions being equal, the percentage of loss from the condensation of the entering steam, the great source of loss in the steam engine, diminishes as the speed increases. To illustrate. In a given engine working under fixed conditions the amount of loss from condensation will be a fixed amount, dependent upon the extent of surface and the time. Now, it is evident that the oftener the cylinder is filled in a given time the greater will be the weight of steam into which the loss will be divided. Mr. Corliss has given us an experiment exactly in point. By bringing down the speed of his pumping engines in the city of Providence to one revolution per minute he brought the duty down to 8,000,000-foot pounds per 100 pounds of coal consumed. In other words, he was getting at each revolution the same amount of condensation that would, in his ordinary mill engines, be distributed through fifty revolutions. In Mr. Porter's large engine, at the cement works previously mentioned, this condensation would be distributed over perhaps 150 revolutions.

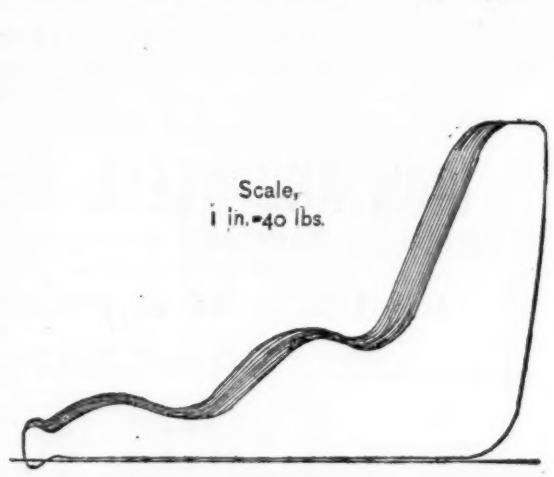


Fig. 1.—Card from Engine 6" x 12", 350 revolutions per minute.

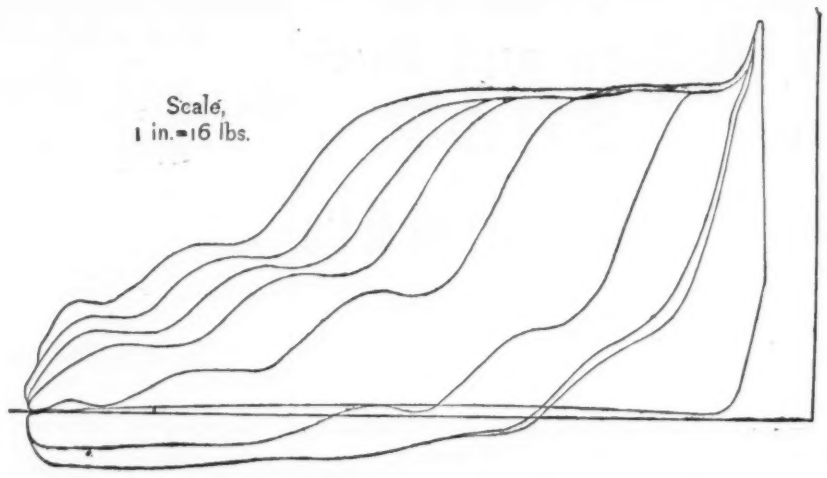


Fig. 2.—Cards from 18" x 36" Engine, 147 revolutions per minute, showing different points of cut-off.

The following set of diagrams, Fig. 2, were taken from the engine at the cement works, and show various points of cut-off. The rapid fall of the expansion line shows how slight is the condensation and how small the loss arising from that source. The larger cards were obtained by throwing the governor downward until the furthest point of cut-off was obtained, and then allowing it to react. It could thus be made to exhibit its entire range of action. In watching this operation we could not discover that the steady running of the engine was in any way disturbed. The motion to both ear and eye was as regular as though there had been no change in the conditions. The governor was apparently amply sensitive to control even greater disturbances. These diagrams show the beautiful character of the exhaust. The action of the exhaust valves seems to be all that could be desired. The cards given in both Fig. 1 and Fig. 2 show that the valves are able to discharge, almost instantly, steam of considerable density. The slight back pressure shown is due to a number of elbows and bends which it was necessary to put in the pipe. The addition made by waste room, or clearance as it is sometimes called, is correctly shown in Fig. 2, so that the engineer can set out the theoretical expansion curve.

This system of high speed engines has especial interest for our readers from the peculiar adaptability it has to the wants of the iron and steel industries. The Edgar Thomson Steel Works have had one of these engines in constant use for two years and a half, driving a cold saw for cutting off rails. It is 11-inch bore and 20-inch stroke, and makes 225 revolutions per minute. Its work has been in that time perfectly satisfactory, which is as high praise as could well be given. Two more are running in the new merchant mill of the Albany and Rensselaer Iron and Steel Company, at Troy, New York. One of these, with a 22-inch by 36-inch cylinder, is driving a 16-inch train direct. The other, which has an 18 by 30-inch cylinder, is driving a 9-inch train by a belt. The revolutions are as one to two. The speed of the larger engine is of course limited by the speed of the train, which varies according to character of work from 60 to 115 revolutions per minute. In the smaller engine the revolutions run from a minimum of 84 per minute up to 225. At the latter rate the piston speed amounts to no less than 1125 feet per minute. We should feel that it was perfectly safe to maintain the latter number constantly as the regular working speed. A Porter-Allen engine is just starting at the Gautier Steel Company (Limited) in their new mill at Johnstown, Pa. The cylinder is 13 inches by 24, and the engine will run 250 revolutions per minute driving a 10-inch tram direct. We shall watch the performance of this engine with a good deal of interest.

The "Allen" valve gear needs more than a passing notice. It is one of the most perfect arrangements for the distribution of steam that has ever been applied to the steam engine. It is capable of working at any speed up to the highest to which it may ever be necessary to run an engine, and it is perfectly positive in its motion. The valves are not allowed to fall or close by the action of a spring or gravity, but are always held fast upon their stems. If Mr. Allen had never produced any other invention, this alone would be sufficient to place him among the foremost inventors of his time. As the valve motion came from his hand it was practically perfect, and there seems to be no need nor possibility for improvement, since it can do all that the engineer desires.

The advantage of high speed in steam engines is not as generally appreciated as could be wished. Every one understands that in the olden time, when 12 or 14 pounds was the greatest boiler pressure that we dared to carry, engines of even moderate power were of enormous size. Just as pressures were increased the size of the engine diminished. If to-day our ocean steamers were obliged to go back to the moderate pressures of 30 years ago, their engines would develop less than one-third of their present power. Now, if we can double or treble the speed of an engine, we can, as in doubling pressure, at a single step obtain the same power with an engine of one-half or one-third the size. This advantage is a very great one in every way. Foundations, engine and engine house are all smaller and cheaper, and where an engine is to be sent to a great distance the saving in cost of transportation makes a heavy percentage in favor of the lighter and more powerful machine.

Some of the details of the Porter-Allen engine are worth special notice. We have mentioned the perfection of the valve motion in general terms. Among the features which contribute to its success are the positive movements of the valves, their working in equilibrium both of pressure and current, while steam and exhaust valves are driven independently. The steam valves have their movements controlled by the governor, but the exhaust is fixed. The piston speed is from 700 to 900 feet per minute, and, as we have seen, is in exceptional cases above 1100. The blow which the sudden admission of steam strikes upon the piston, and through the piston and connecting rods upon the crank pin, is cushioned, as it were, by putting in reciprocating parts of such weight that the steam expends a portion of its force in starting them into motion. Once in motion their momentum is utilized in keeping up the turning force upon the crank when the steam, by expansion, is losing its force. Familiar illustrations of the smooth running of high-speed engines with heavy reciprocating parts, are to be found in locomotives and propeller engines. In the locomotive, especially those with three or more pairs of wheels coupled, the reciprocating weight is exceedingly heavy, yet they run with great steadiness and smoothness of motion; and the same is true of propeller engines. It is an easy problem to compute the weight of parts required to give an engine perfect steadiness and smoothness of rotation at any number of revolutions per minute. At the highest speed we have ever witnessed in these engines the movement was as quiet and as steady as in the slowest of the old-fashioned engines. The mathematics of this subject is exceedingly interesting, but we cannot enter into the subject here. It is sufficient to say that the pressure tending to turn the crank becomes nearly as steady as though a pair of ordinary cylinders with cranks at right angles were used. The workmanship of these engines is exceedingly beautiful, and the arrangements for lubrication perfectly satisfactory. We have never heard of a hot bearing on one of these engines, and presume that such a thing could only occur if filling the oil cups was neglected. The governor which controls the point of cut off is of the well-known Porter pattern. There is no form of governor so extensively used in England and on the Continent as this; indeed its use may be said to be almost universal. It is extremely sensitive and has complete control of the engine.

Philadelphia Enterprise.—The *North American* gives Philadelphia a "first rate notice," as follows: The country which has seen a fleet of first-class European steamships constructed and sustained by Philadelphia; a still larger fleet of iron steam colliers built and supported here; a line of southern steamers built and maintained, and iron steamships of the first class constructed on the Delaware to cross the Pacific, to accommodate South America and to enlarge our coasting tonnage, now welcomes the construction of larger steam colliers to market American coal in the Mediterranean and to bring a larger share of the commerce of that sea here. This is direct and wise maritime energy—wise, because all the world's tonnage has turned to steam and iron, and we are forced to build, and direct because it runs with the endeavors of every trade and calling to place all of our products abroad in such volume as to secure appreciable values, and of such a nature and quality as to occupy ground long resigned to European energy, but capable of being Americanized and rendered tributary to our use. It is proved that the coasting colliers can cross the Atlantic; that anthracite is welcomed where it was unknown, and that the business of supplying it can be made profitable. The new attempt seems thoroughly justifiable. If it is, others similar are warranted, and such evidence may soon fill the Delaware with a share of the great steam tonnage that enters the North River—but American. It is deserving of notice how in so many directions—in the Centennial, in steamship and railway building, in cotton fabrication, in exports to South America and Europe—this city is doing so much, while some others depend wholly upon the help they receive.

The movement of foreign trade has made an unusual change in the relative positions of American ports. Baltimore shoots up to second place in the export business, owing to the enormous wheat crop of the Valley of the Cumberland and the Southwest, and Boston comes next, with Philadelphia fourth, and only a little ahead of San Francisco, which also has shipped a good deal of wheat. In imports Boston stands second, which in the total of both exports and imports brings that port up to the second place in spite of the great increase at Baltimore. Then comes San Francisco, which is just a little ahead of Philadelphia, owing to the receipts of teas. Philadelphia has received twice as much from abroad as Baltimore, though the gross tonnage has been less.

M. Emile de Girardin proposes, in *La France*, to close the Exhibition on Oct. 31, out to reopen the Champ de Mars on May 1 next year for another six months, the exhibitors having the option to remove their goods, to replace them, or to give up their space altogether.

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SEE PAGE 9.

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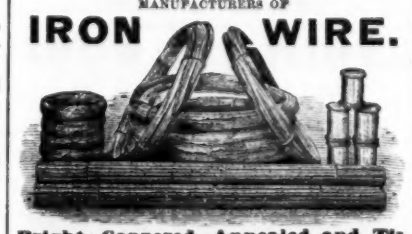

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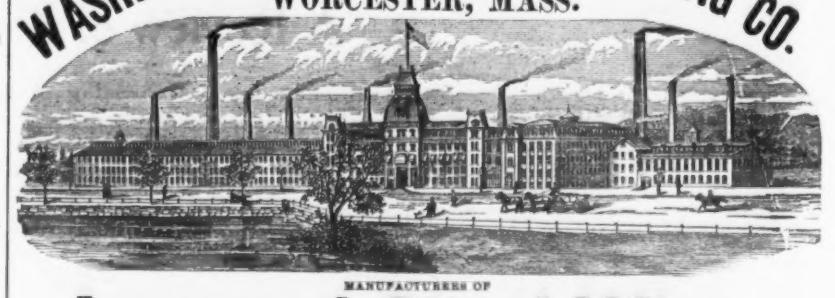

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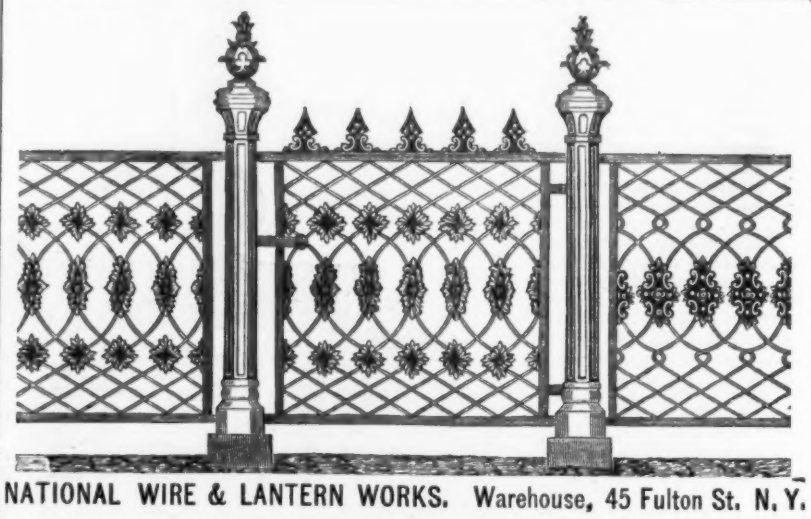

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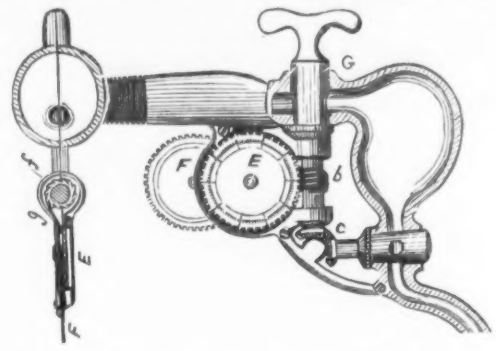
New Patents.

We take the following abstract of new patents, recently issued, from the official record:

MEASURING FAUCET.

To F. X. Rousseau, Arthabaskaville, Canada.—June 25.—1. The improved measuring faucet, consisting of the measuring chamber or body and the two valve plugs G H, arranged at right angles to each other and provided with the pinions *e*, gearing directly into each other.

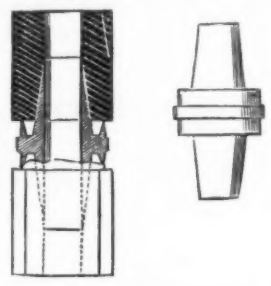
2. As an improvement in measuring faucets, the plugs G H and the registering devices E F *f g*, in combination with the body, consisting of the two equal parts, constructed and arranged to embrace and hold the moving parts between their faces.



3. The valve plug G, having its stem provided with the thread *b* and ratchet wheel *f*, in combination with the register wheel and the divided frame, arranged to embrace and hold the other parts.

COUPLING FOR THE JOINTS OF LOGS.

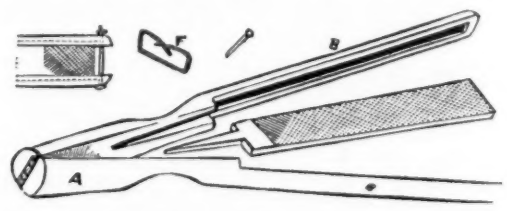
To O. Wells, Newberry, S. C.—July 2.—A metallic joint coupling consisting of the tapered socket pieces, their encircling flange, and the sharp-edged annular lips.



FILE-GUARD.

To Mary P. Ayers. San Francisco, Cal.—July 2.—Grooves on the inner sides of two arms, hinged together, receive the edges of a file, which are thus protected. One end of the arms forms a handle.

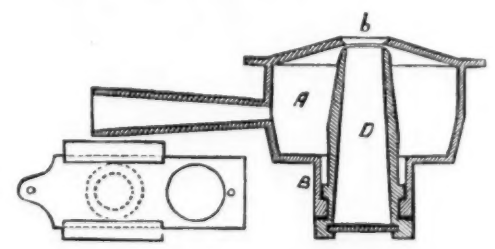
The file-guard or protecting device consisting of the handle A, with its projecting forks B, with their grooved edges fitted to inclose the edges of the file, and secured in place by means of the loop F, or equivalent device, said guard being removable.



TUYERES.

To J. S. Miller, Middletown, Conn.—July 2.—1. A tuyere having a wind chest, A, and within the same an axial tube, D, having its exterior wall inclined toward the discharge opening *b* of said wind chest, and its bore of equal diameter with said opening at its upper end, and increasing in conical form to its lower end or mouth.

2. In a tuyere, the combination, with the wind-chest having the axial blast opening *b* and neck B, of the axial tube D, adjustable upon inclines in said neck, and having its upper exterior wall of conical form, converging toward said blast opening.



MELTING AND REFINING IRON AND FURNACES THEREFOR.

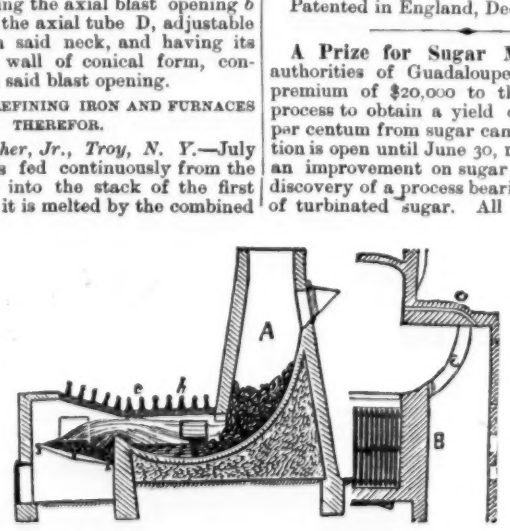
To Wm. Sleicher, Jr., Troy, N. Y.—July 2.—The iron is fed continuously from the inclined hopper into the stack of the first furnace, where it is melted by the combined heat of both furnaces, runs down the curved bed and hearth of furnace No. 1, from which it is tapped from time to time to furnace No. 2 for further refining.

1. Combined in one structure, a stack and a furnace, the bed and hearth of which respectively are constructed practically in a continuous curve, the furnace being provided with a tap-hole for delivering molten metal, and the stack with a charging opening in its wall, through which unmelted metal is placed in the stack.

2. A furnace consisting of a fire chamber, a vertical stack with charging door, an incline to receive the charge, and a hearth, combined with a second furnace provided with a tap-hole and a spout or channel connecting the hearths of the two furnaces, whereby charges of unmelted iron may be introduced and melted during the work of further melting, refining and tapping off, and the whole operation of the combined apparatus be conducted uninterruptedly.

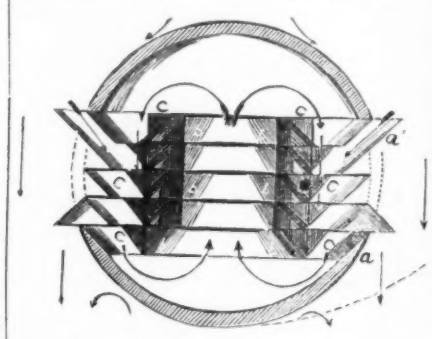
3. The removable top for the furnace, consisting of a series of separate rows of fire brick, *h*, each clamped between jaws C, substantially as described, the separate series resting side by side on the respective walls of the furnace.

4. The first furnace, A, having the stack A′, provided with an incline uniting with the curve of the hearth of the furnace, combined with the lower second furnace B, spout or channel *c*, and bridge wall *c′*.



COMBINED ATMOSPHERIC INJECTOR AND EJECTOR.

To John H. Irwin, Philadelphia, Pa.—July 2.—1. An annular atmospheric injector, in combination with an atmospheric ejector arranged within the former, and operating in connection therewith.



2. An annular atmospheric injector, in combination with an ejector arranged within the former, and chambers or receiving compartments arranged above and below the injector, whereby a balancing effect is secured and a continuous circulation produced.

3. The injector deflecting plates *a* and *a*¹, in combination with the ejector deflecting plates *b*.

4. The deflecting plates *a a*¹ of the injector, in combination with the supporting and deflecting plates.

205,371.—*Sad-Iron and Heater.*—Charles Ezard, Bradford, England.—June 25.—Patented in England, Dec. 29, 1876.

A Prize for Sugar Machinery.—The authorities of Guadaloupe have offered a premium of $20,000 to the inventor of a process to obtain a yield of over fourteen per centum from sugar cane. The competition is open until June 30, 1880. It is not for an improvement on sugar mills, but for the discovery of a process bearing upon the yield of turbinated sugar. All the expenses of transit, putting up of machinery or implements are to be borne by the inventor.

The German colonies near Marengo, Iowa, established twenty ago, now own 30,000 acres of land, valued at $50 per acre.

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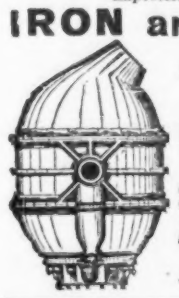
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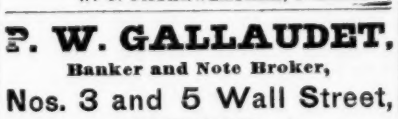
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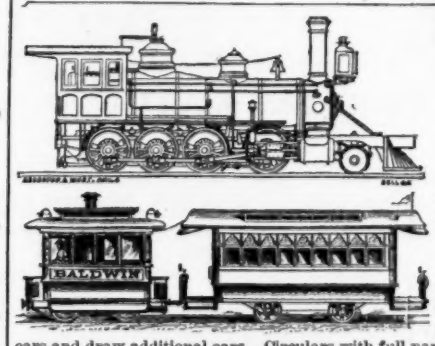

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Our Trade with South America.

Mr. E. L. Baker, consul to Buenos Ayres, under date of June 14, sends to the Department of State the following: During the last week Buenos Ayres has been visited by a number of gentlemen who represent leading commercial and manufacturing interests in the United States. That you may understand the flattering reception which these gentlemen have received here, I inclose you several extracts from Buenos Ayres newspapers:

United States Commission in Buenos Ayres.—The wonderful impulse given to manufacturing interests in the United States during the last 15 years has forced manufacturers to go beyond the limits of their own country for a market, and in pursuance of this policy South America, which has been little regarded by commerce and trade, has become a point of considerable interest. It is now about three years since a Philadelphia house, Messrs. Fralick, Murphy & Co., moved to form an association or syndicate, composed of some twenty or more of the heaviest manufacturing interests of that city, representing a capital of $25,000,000, the object of which was to bring the manufacturers in connection with the consumers in the countries of South America, without the expensive intervention of commission houses. Following the same line of policy, an extensive association was organized under the style of an industrial union with similar objects. These two powerful combinations soon became impressed with the imperative necessity of two cotemporary adjuncts of commercial efforts—improved postal communication and steam traffic between the two continents, one on the Pacific and one on the Atlantic coast.

These objects were brought to the attention of the United States government, which most earnestly entered into co-operation with these important commercial interests, and created commissioners authorized to represent the United States government in arranging postal conventions, and charged with studying the countries of this continent with a view of gathering information which should serve as a reliable guide for the aroused enterprise referred to above. This commission was appointed by President Hayes, who, at the instance of the projectors, placed at its head Mr. John Wm. Fralick of Philadelphia; and with him are associated Mr. Hillary Messimer, engineer to the commission; Mr. M. Watts, secretary; and Mr. Warren Ingersoll of Philadelphia, an official *attache* of the party. This commission crossed the United States to San Francisco, *en route* down the Pacific coast, and everywhere they and their mission received the greatest attention, the press and public engaging earnestly in discussing the commercial invasion of new territory. After having visited the West coast this commission arrived in the Plate, spent some time in Montevideo, and is now in our city, whence it will proceed to Rio, and thence to Para and home again. The methods of procedure are indicated more or less clearly in what we have already said.

The primary object is to secure direct steam communication between the United States and the Plate. The importance of this has several times been urged by us, and we are pleased to see that the influences of the combinations we have named are against subsidizing a line to Brazil, or any merely local point, but insist upon the necessity of steam service for the two coasts, and will urge the extension of the new line to Rio to this river. In every country an agent is selected and appointed to represent the syndicate, and to take such measures to introduce and push its interests as the market will permit. We believe Mr. Howard has been appointed at Montevideo, and Mr. C. S. Bowers of this city to this honorable and important duty. We understand Mr. Fralick to say that the Plate presents a very encouraging field of operations, and the business community show a cordial interest in the success of the attempt to bring the republics of the North and of the South into closer commercial relations. To show the incentive to this movement on the part of the United States, we have only to state that the United States imported in 1876 $200,000,000 from South America, and sent only $80,000,000, leaving a balance against itself of $120,000,000 in that year. Surely a good reason for attempting to improve trade.

American Trade—Invasion of Spanish America.—Commercial agents from New York, Philadelphia and other great cities of the United States are at present overrunning every part of South America on behalf of manufacturers in all branches of export trade. Boots and shoes, corn shellers, revolvers, agricultural implements, printing paper, locks and bolts, apple peelers, horse shoes, furniture, saddlery, lamps, sewing machines, ink stands, soaps, razor straps, pianos, everything that the habits of modern life demand, or that Yankee ingenuity can invent to save labor and promote human comfort or human industry, is produced by American manufacturers at prices much lower than similar goods from Europe would cost, at the same time finished off in a style of workmanship that shows artistic style combined with the skill of the artificer. For half a century the people of the United States overlooked Spanish America, until the commerce of this part of the world has sprung into such importance that our import and export trade in the River Plate Republics is now three times as much per head of the population as the ratio in the United States. Brother Jonathan now seems determined to annex commercially the whole of South America. He is building steamers for the Brazilian trade which are described as floating palaces. He is sending hundreds of artisans under Col. Church to open up the trade of Bolivia by the Mamore to the Amazon. He spends more in advertising his wares at Panama, Valparaiso, Buenos Ayres and Rio Janeiro than ever the merchants and manufacturers of Europe have done since newspapers were invented in this continent. Finally, his agents swarm from Guyaquil to Montevideo. All this plainly shows that our trade is going to take another direction.

1. Cadiz had a monopoly of these countries until Gen. Beresford introduced free trade in 1806.

2. Great Britain held undisputed sway in the commerce of the River Plate and West Coast for more than 50 years.

3. France made a spurt under Napoleon III, her relations with Spanish America increasing fourfold.

4. Germans are at present the foremost importers and exporters in almost every country of South America.

5. The Americans have made up their mind to control the entire commerce of the New World, and their success already in Canada foreshadows what is going to occur in Spanish America. These reflections are strongly impressed upon any one who takes the trouble to visit Mr. Parkman's collection of hardware goods now on show at the Hotel San Martin. Many of the goods are sold for less than an English penny; the locks, ornaments, chandeliers, clocks, &c., are admirably finished. No more striking proof of the energy of Americans can be adduced than the fact that Messrs. Corbin's factory, which employs 980 operatives, was started 35 years ago by four brothers, journeymen blacksmiths, whose total capital was $3200. The *Nacion* of yesterday has the following well-deserved comments upon the Parkman collection:

"We have more than once had occasion to call public attention to the great development observable for some time past in the commercial relations between this country and the United States, a movement which acquires fresh force every day, and is destined to open new and vast channels of trade. But yesterday a gentlemen representing fifty North American paper mill firms arrived to initiate a competition in that line, and he has laid the foundation of a valuable trade. To-day we have among us a representative of the United States' hardware trade, who comes fully provided with samples and price catalogues, determined to leave no stone unturned to secure the Argentine market for his principals. We refer to Mr. H. Parkman, whose magnificent collection of samples is on view in Room No. 19, Hotel San Martin. There are marvels of art and industry in this collection, and the extreme cheapness of some of the articles is quite incomprehensible. In the way of locks, latches, bells, &c., Mr. Parkman represents P. & F. Corbin, of New Britain, Conn. The other hardware firms represented by Mr. Parkman have a united capital of 6,000,000 to 7,000,000 hard dollars. Among them are the Rhode Island Horse Shoe Company. The Fowler Horse Nail Company. The Bradley & Hubbard Manufacturing Company, large manufacturers of kerosene lamps and fixtures; also gas fixtures, clocks, &c. The Atha Tool Company, manufacturers of steel hammers, hatchets, &c.. Atha Hughes, manufacturer of table oil cloths; also carriage and furniture oil cloths. The Philadelphia Hardware and Malleable Iron Company, manufacturers of saddlery and furniture, hardware, malleable iron, &c. John Lucas & Co., paints, colors, varnishes, &c. L. D. Farr, floor oil cloths. Edward Lauderbeck, rustic window shades, &c. Chas. G. Blatchley, cucumber wood pumps and ice cream freezers. The T. C. Richards Hardward Company, manufacturers of coffin trimmings, picture nails, &c. The Taylor Iron Works, manufacturers of chilled iron car wheels."

Some of these firms turn out hundreds of thousands of articles daily and some millions, such as the nail manufacturers. We cannot enumerate or describe Mr. Parkman's collection, but we wish to bring it under the notice of those interested, who will thank us for giving them an opportunity of seeing what the *Standard* very appropriately calls a museum of curiosities. We have one word more to say in duty to this new champion of our commercial greatness. We hear that Mr. Parkman was subjected to inconvenience at the custom house to get his samples in duty free, and his guarantor has been obliged to make a declaration in the matter, which is still pending. This is neither just nor reasonable. In all his long journeyings this is the first port where Mr. Parkman met with such obstacles. In every other place he was received with open arms, it being self evident that his collection is only of samples, as there is not a second of any article in it. It is to be hoped the government will at once accede to the petition of Mr. Parkman's representatives, and thus show its desire to foster a movement which promises so much good to the country in the immediate future. As for Mr. Parkman individually, we wish him every success and a pleasant sojourn on Argentine soil.

American Trade.—Mr. Flalick, representative of some of the most influential firms in North America, arrived to-day from Montevideo, and will doubtless be as successful as some of his countrymen have been in pushing an active trade in this city. The manufacturers of Fall River, Massachusetts, have sent us a very elegant album illustrative of the growth of trade in that place since its foundation, 100 years ago. Mr. Edward Augustus Hopkins has done an invaluable service to the export industry of Buenos Ayres by publishing, for the use of the United States Congress, an essay on the necessity of reducing the duties on River Plate wools, and the advantage of prolonging the new line of mail steamers as far as the river plate.

American Trade.—In another column will be found the returns of trade between the United States and the Argentine Republic for a period of seven years. The totals of imports and exports show, 1870 to 1876, as follows: Imports, $22,203,000; exports $24,078,000. This shows that the balance of trade is pretty even. But if Mr. Hopkins' petition to United States Congress be resolved favorably we may soon expect to see our import and export trade with the United States double. To-morrow we shall give a resume of the said petition, which is full of valuable statistics and cogent arguments, as also the petition of Mr. Frank Brown (representative of Samuel B. Hale & Co.) to obtain an ad valorem duty on wools instead of a specific one of weight, which at present imposes the same dues on River Plate unwashed as on the fine scoured wools of Australia.

Trade with United States.—It seems Commissioner Fralick is no less impressed than Messrs. Parkman & Pond with the large and

THE BEST KITCHEN AND TOILET WARE.

It is made of Purified Sheet Iron and Covered with a Perfect Glaze of Unquestionable Purity.

Its Merits have been tested and are vouched for by the Foremost Chemists and Experts in the Land.

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BURLINGTON, N. J.

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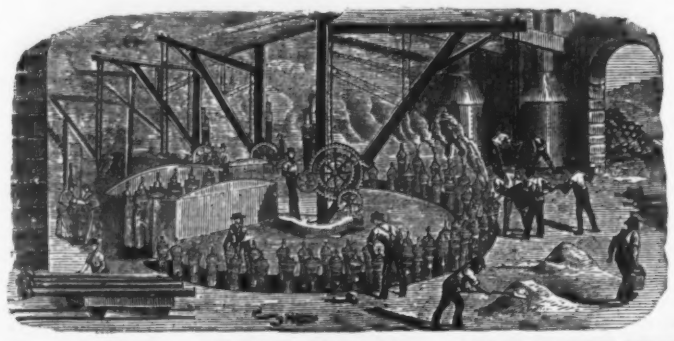

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FOR WATER AND GAS.

Light Castings and Metal Patterns

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Iron Founders,

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CORRESPONDENCE SOLICITED.

Will make estimates on completed work when desired.

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PATENT
Corrugated Bottom
COAL HODS,
Black & Galvanized.
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Oriental Funnel
COAL HODS.

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No. 294 Pearl Street, - - - NEW YORK.

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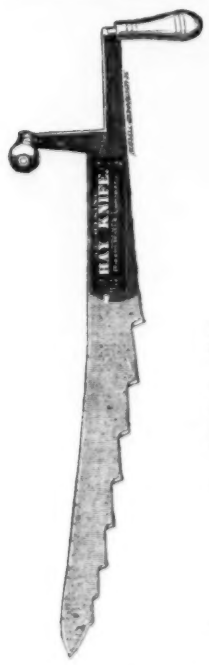
TIN WARE.



LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

Hiram Holt & Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE & BIRGE MFG. CO., Agents at St. Louis.

"WROUGHT BUTTS."

SEND FOR PRICES TO

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Southern States Coal, Iron & Land Co.

LIMITED,

ENGINEERS, IRON FOUNDERS & BOILER MAKERS,

Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of

WASHED FOUNDRY COKE,

Free from Slate and Sulphur.

Machine-Made Brick, Limestone, Lumber and Shingles.

FARMS TO LET.

Apply to the HEAD OFFICE, South Pittsburg, Tennessee.

W. A. HOSKINS,

DEALER IN

MINERAL LANDS,

Chattanooga, Tenn.

Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

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MANUFACTURERS OF

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Manufacturers of and Dealers in

Pig and Railroad Iron.

CHATTANOOGA, - - - - TENN.

WASON CAR & FOUNDRY COMPANY,

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Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

TENN. COAL & RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 50,000 bushels of coal and coke per day.
Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad.
Being also the proprietors of several extensive tracks of very fine lands, offer special inducements to colonies. Communications addressed to the General Manager will receive prompt attention.

T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

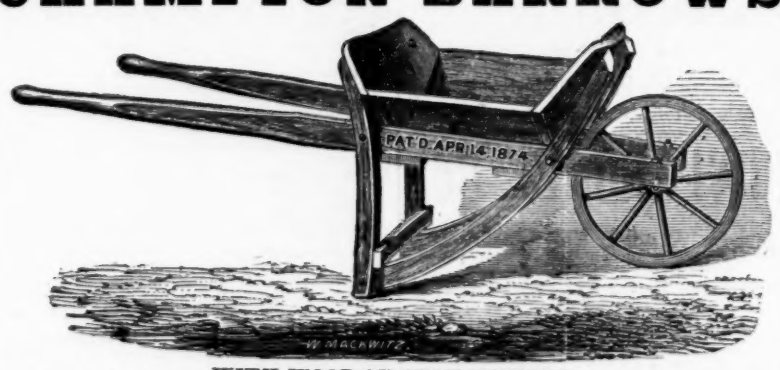
S. B. LOWE,

Pig Iron, Storage & Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

Chattanooga, Tenn.

CHAMPION BARROWS.



WITH WOOD OR IRON WHEELS.

A first-class article and a specialty, that will make a demand in any market and afford a good margin for dealers. We are prepared to furnish them in large quantities. Manufactured by

BRYAN MANUFACTURING CO., Bryan, O.

SEMPLE & BIRGE MFG. CO., Sole Western Agents, ST. LOUIS, MO.

For Sale by THE NEW YORK PLOW CO., General Eastern Agents, 55 Beekman St., New York.

STANDARD NUT CO.,

Pittsburgh, Pa.,

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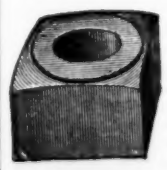

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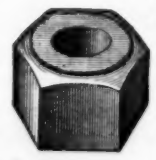


R. R. FISH BARS,

BOLTS,

SPIKES,

RIVETS, &c.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c Also, Die Sinking. Manufacturers also of Bricklayers', Moulders' and Plasterers' Tools, Saddlers' Round and Head Knives.

WILLIAM ROSE & BROS.,

36th & Filbert Sts., West Philadelphia.

RICHARD P. PIM,

MANUFACTURER OF

MALLEABLE AND GRAY IRON CASTINGS

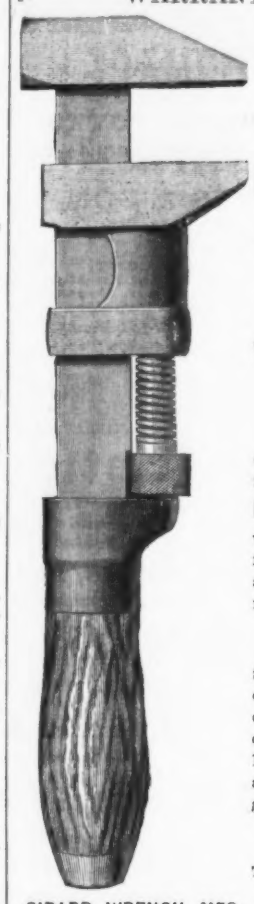
For Car, Carriage and Tinsmiths' Hardware.

Corner Taylor and Buttonwood Streets, WILMINGTON, DEL.

TRADE STANDARD MARK.

GIRARD WRENCH.

WARRANTED.



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GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

WEEKS'

Grape & Fruit Picker.

An Indispensable Article for Picking Choice Fruit.

With this tool choice grapes and other fruit can be detached from the branches and deposited in the receptacle for receiving them without touching them with the hands.

A. A. WEEKS,

Sole Manufacturer,

82 John Street, New York.

Patent Lantern for Oil and Kerosene.

This Lantern is the most salable in the market; it burns Kerosene or Oil with superiority. The flame is regulated from the outside. The globe is removable. It is neat, *Cheap,* handy, compact and durable. It has more advantages than higher priced Lanterns. SEND FOR PRICE-LIST.

N. DUBRUL & CO.,
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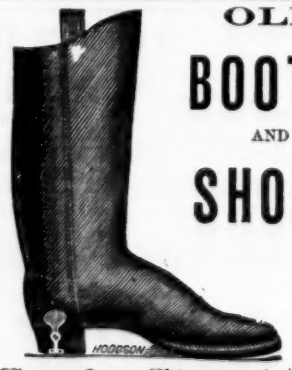
441 & 443 Plum St., Cincinnati, O.



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Can be Straightened AND NEW ONES KEPT STRAIGHT BY USING

LYON'S PATENT
Metallic

HEEL STIFFENER.

Send for a new Illustrated Price List for 1878.

N. LYON, Sole Manufacturer, ALBANY, N. Y.

Stove Repairs.

Repairs for Stoves made at Troy, Albany, Rochester Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago Milwaukee and elsewhere, at

W. C. METZNER.
127 W Randolph St. CHICAGO, ILL.

lucrative field which the River Plate offers for American manufacturers. This new channel of our import trade will be an immense benefit to these countries, as the Americans offer their merchandise, of admirable quality and finish, for half the prices we have been accustomed to pay to Europe. There was a time when American trade was supposed to consist largely of wooden nutmegs and Connecticut clocks. But that age is past. Brother Jonathan is now beating British hardware out of Canada and shipping cheese and hams to England, and supplying the printing offices of South America with paper far superior to French or Belgian and slightly cheaper. The prolongation of Roach's magnificent line of steamers to connect the River Plate with Brazil, will place us in direct contact with the United States and powerfully promote a trade that promises the most profitable results, both to buyer and seller, to manufacturer and consumer.

Trade with the United States.—There is a great push made now to increase the trade of the United States with South America. Special agents for various large manufacturing companies are about to be named in this city, and one or two members of our commercial body are now sojourning in the States on business purposes intent. All this will result in something, but the very best agent for American trade with the Plate would be a line of first-class steamers between Buenos Ayres and New York, and as Mr. Hopkins' project for prolonging Roach's mail line (New York and Brazil) to the River Plate is now before the United States Congress, we hope it will receive favorable consideration. Our trade with the United States during seven years showed thus:

	Imports.	Exports.
1870	$2,862,338	$3,827,530
1871	2,067,275	3,709,359
1872	3,205,944	4,312,355
1873	5,167,616	3,032,925
1874	3,949,584	3,747,300
1875	3,069,354	3,055,205
1876	1,880,770	2,393,236

It will be seen that for the period given our trade with America was never lower than in 1876, and from what American merchants state, it is probable that 1877 will prove even lower than 1876.

Chief Exports.	1875.	1876.
Horse hair	321,946	174,878
Goat skins	152,037	129,087
Nutria skins	48,467	9,562
Dry cow hides	1,474,503	1,174,044
Salt "	67,770	2,465
Dry calf	80,219	107,633
Wool	729,479	711,182
Ostrich feathers	62,992	34,793
Tallow	16,332	.....
Chief Imports.		
Starch	93,476	82,666
Kerosene	200,223	207,057
Aguardiente	28,211	15,230
Sugar	147,159	277,786
Coal	26,704	1,696
Drugs	102,775	51,845
Flour	386,935	102,692
Hardware	127,831	128,570
Farm implements	127,192	38,460
Butter and cheese	35,565	21,959
Pine	1,092,016	479,998
Furniture	126,872	86,397
Blacking	25,675	23,549
Tobacco	102,000	104,000
Dry goods	77,628	15,848

From 1870 to 1874 we paid the Americans $8,673,105 for white pine. In the same period we paid for railway materials $549,346, and nothing in 1876. Tobacco is on the increase, but cheese, furniture, machinery and many other items show a great decline.

Water Gas.

The question of lighting dwellings and thoroughfares of cities well deserves the widespread popular attention which is now devoted to it, as it may be considered the outgrowth of universal dissatisfaction with the facilities offered at present. The most formidable rival of coal gas is the Lowe-Strong water gas, which since its first introduction at Phœnixville in 1874 has rapidly struggled into prominence, every step of its advance having been gained in the face of a determined opposition. While usually the history of such contests is of little interest to the general public, the fact that in this case it has brought out much additional knowledge on topics interesting as well from a scientific point of view as from their direct practical bearing, justifies a brief summary of the points at issue.

Briefly, the Lowe process is the following: A generator of the ordinary type is filled with fuel brought to a high temperature by the aid of blast. The combustible gases thus formed are carried to a chamber filled with loose fire-brick, called a superheater by the inventor, although it should more properly be termed a regenerator. As soon as by the burning of the generator gases the regenerator has attained a high temperature, the blast is cut off and superheated steam is admitted a little above the grate, and simultaneously small streams of crude petroleum or naphtha are allowed to drop through the current of ascending gases upon the incandescent fuel. The steam is decomposed and hydrogen and carbonic oxide are formed. The products of the decomposition of petroleum, hydrocarbons, pass to the regenerators together with the water gas, where the hydrocarbons are gasified. As soon as the temperature of the generator falls below a certain limit the flow of steam and of petroleum is stopped, fresh coal is charged and the blast of air turned on again.

The Strong process, which is now consolidated with the Lowe, differs from it materially, as the full description given in *The Iron Age* of April 11th will prove.

A series of able reports has been made upon the chemical characteristics of the Lowe gas by Prof. Henry Wurtz of Hoboken, N. J., whose painstaking labors and complete familiarity with the subject have contributed much toward placing the process among the established technical industries and insuring for it a growing range of utility. He has found that the impurities of the gas are surprisingly small in amount, as the following analyses, which at the same time illustrate the action of the purifying agents, show:

VOLUMES CUBIC FEET IN 100.

	Crude gas.	Cond's'd gas.	Purifi'd gas.
Condensable tarry vapors with a little naphthaline	.337	.211	....
Water vapor	3.871	2.469	1.092
Gaseous ammonia	.184	.017	.011
Gaseous sulphuretted hydrogen and equivalents	.385	.150	.030
Carbonic acid	3.514	3.550	.049
Total without water	4.480	3.928	0.990

The ammonia in the Lowe gas is not more than one-fifth or one-sixth, while the sulphur is about one third of that of the crude gas from coal.

In estimating the composition of the gas made by the various new processes certain difficulties, arising from the presence of hydrocarbons, known as the paraffine series, present themselves to the analyst, and it is the special merit of Prof. Wurtz to have attempted the solution of the problems with at least partial success. The method he employs is that of train analysis, the chief advantage of which, when compared with eudiometry, is that many thousands of cubic inches are operated upon instead of fractions of a cubic inch only. The fact that petroleum water gas owes one-fourth of its candle power to the presence of hydrocarbons of the paraffine series teaches the importance of the chemical determination of their amounts. The following is the most complete analysis of Lowe gas yet made; but it should be stated that as regards the paraffine series the figures are approximate only:

		Vols. per 100.	Density.	Computation.
Hydrogen		46.49	× .000693	= .0322
Marshges		11.75	× .00553	= .0650
CO		21.51	× .009674	= .2081
N		4.30	× .097	= .0417
O		.20	× .01106	= .0022
Olefine gases.	Ethylene.	6.50	× .00968	= .0629
	Propyl'ne	.35	× .01455	= .0051
	Butylene.	.15	× .0194	= .0029
Parafi'e gases.	Ethane.	.50	× .0104	= .0652
	Prop'e.	1.00	× .01522	= .0052
	Butane.	7.25	× .02	= .1450
Total				.5855

Density directly determined mean of 7. .5882

As for the illuminating power of the gas, its resistance to the action of frost, its uniformity, and the slight loss of candle power if conveyed over large distances, numerous experiments have proved the ability of the new gas to cope with and outstrip coal gas. The candle power of the Lowe gas varied from 18 to 22 candles at Utica and Baltimore. In order to test its resistance to the action of frost, Prof. Wurtz passed it through a coil of lead pipe kept at 6 degrees below zero, and yet the impure gas of 17.25 candle power was reduced by the passage to 16.97 candles only.

A safeguard against a sharp practice sometimes resorted to by coal gas manufacturers of increasing consumption by decreasing the density of gas lies in the fact that the density of the Lowe gas is .57 to .60, and that no method is known by which it can be reduced below the lesser figure. The lowest density found was that determined by Prof. Wurtz at Utica, N. Y., where it was .571. Later experiments at Baltimore, embracing 32 determinations during five days, yielded a mean of 1.5885, the highest figure during that time being .5961, while the lowest sank to .5815, a proof of the uniformity of the product.

It has been urged by some, notably by Prof. Morton of the Stevens Institute of Technology, who quotes a long series of authorities, that the large percentage of carbonic oxide is a highly objectionable constituent of the gas. In this connection we would mention that the analyses of Prof. Morton seem to be the results of fallacious methods, as they do not conform to the rule that the total oxygen volume represented in the products cannot exceed half the total volume of free oxygen. In regard to the danger of the gas, the testimony taken by Prof. Wurtz at Utica is decidedly of a negative character. He is sustained by Dr. Moore, of Jersey City, who points to the extended use in Europe of wood gas, containing in some cases between 35 to 42 per cent. of carbonic oxide, while the Lowe-Strong gas does not go beyond 25 to 30 per cent. A very important confirmation of the views of these gentlemen comes from Prof. E. Frankland, of the South Kensington Museum, and the famous chemist, Prof. Ad. Wurtz, a member of the Institute of France. The former gentleman says: "I have no hesitation in saying that it may be used with safety both in public buildings and private houses." The latter scientist expresses himself very strongly, as the following translation, which we make from the original, will prove (this applies to the gas made under the Tessié du Motay patent by the Municipal Company of this city): "Without a doubt there is danger of poisoning with all gases containing carbonic oxide, and coal gas is not an exception, as it may hold as much as 12 per cent. by volume. I believe, however, that this danger has been exaggerated; it can only have fatal consequences in exceptional cases and through a sort of fatality which may be left out of consideration if it be considered that gas is unhesitatingly employed for lighting our dwellings, notwithstanding the really great danger from explosion and fire which exists, whatever may be its source or composition. You have realized an important progress by manufacturing, under favorable circumstances, gas which is remarkable for its illuminating power and which possesses an odor sufficiently strong to reveal its presence."

The following short table gives some data from which the actual running expenses may be judged or computed:

	Prod't pr day. cub. ft.	1000 cubic ft. gas. Coal. Lbs.	Oil. galls.	Lab'r days.
Utica, 1875	101,387	66.56	3.11	10.32
Philadelphia, 1877	151,733	54.90	2.87	8.07
" 1878	181,677	53.33	3.82	6.74
Baltimore, 1878	333,000	59.87	4.62	4.20

The first two works used crude petroleum and the second two naphtha. The table illustrates well the rapid decrease of cost of labor as soon as the production is increased.

King Louis II, of Bavaria, has just been robbed in his palace of Reutte. Three Italians made an entry burglariously and carried off a tea service, two Japanese cups, a watch, and some articles of jewelry, the whole of a value of 30,000 florins.

Mr. Richard Rogerson, of Liverpool, is spoken of as a model English workingman. He is 77 years old and has worked in a foundry for one firm for the last 66 years.

USE THE BEST.

NEW

AMERICAN FILE COMPANY.

THE NEW AMERICAN FILE COMPANY have the exclusive right to use the Bernot process for cutting Files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing Files and Steel.

NEW AMERICAN FILE CO., Pawtucket, R. I.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y

Granted for

McCAFFREY & BRO.,

Pennsylvania File Works,

Fourth St., north of Columbia Ave., Philadelphia, Pa., U. S.

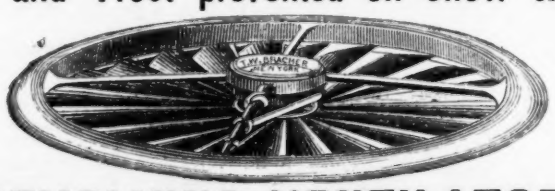
Superior Goods.

Silver Medal.

Highest Premium.

Domestic and foreign buyers who are desirous of handling a superior File or Rasp should send us their orders. Gentlemen visiting the Exhibition Universelle in Paris are invited to examine our exhibit at D 3, American Section.

Steam and Frost prevented on Show Windows.



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For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, $1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. Loomis, M. D., University of City of New York, writes as follows:

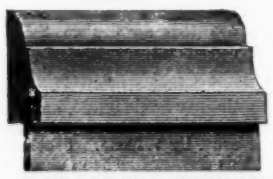
"From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply *steam filtered air.* Prices and discounts to the trade sent on application.

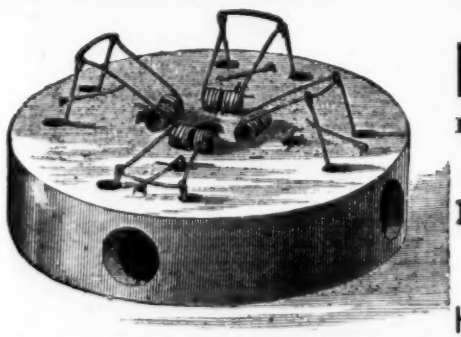
The "**Economy**" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all *after expense* of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of *fastening* or *undoing* of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6.



BRACHER VENTILATOR CO., No. 3 Park Row, New York.



"**Common Sense**"

MOUSE TRAPS,

For Home and Export Trade.

BEST IN MARKET.

RIPLEY MFG. CO.

Unionville, Ct., U. S. A.,

Manufacturers of

House Furnishing Hardware.

CARROLL L. RIKER, JOBBER OF SPECIALTIES, offers the following regular specialties to the trade in the quantities and at the prices quoted:

Coes' Pattern Malleable Wrench, 10 in., 24c. ea.; 12 in., 29c. ea.; Giant Nail Puller, $2.50 ea., and Little Giant ditto, $1.83 ea.; Dover Egg Beater family or tumbler size, 31c. ea.; Mrs. Potts' Pat. Crown Irons, 5 pieces, $1.21 per set; the Crown Fluter, 4½ in. rolls, $2.10 ea.; Clawed Tack Hammer, 6c. ea.; the Lawrence Perfect Curry Comb, 4 bars, close back, 5c. ea.; 6 bars, open back, 8c. ea.; Romer & Co.'s Padlocks, No. 20S, 4 in. bl'd, 12c. ea.; Mouse Traps, 16c. per doz. holes; Heavy Adze Eye Malleable Hammer, full polish, 11c. ea.; Marvin's Safes, 50 % off the list price; Marvin's Scales, 40 % off the list price; Fairbanks Scales, 30 % off the list; Seven-Chambered Revolver, warranted steel barrel and chamber, nickel-plated, 22 bore, with cleaner and box, $1.20; Swift's Coffee Mills, discount 25 % from list. Screws by the single gross, 65 % off Russell & Erwin's list; Sand Paper, B. A. & Co.'s, fine, medium and coarse, 1c. per sheet; Cryst l Spring Toilet Soap, in half gross boxes, $1.65 ea.; Solid, Leather Back Horse Brushes, 30c. ea.; Blacking Brushes, $1.00 per dozen; the same, extra fine, 30c. ea. Terms, net cash before shipment; packing, 25c.; cartage, 25c. Send postage for my illustrated catalogue containing cuts of several hundred different specialties.

104 Chambers and 72 Church Sts., New York.

MACHINE MOULDED MILL GEARING,

AS ACCURATE AS CUT GEARING

AND MORE DURABLE IN USE.

Saves Time and Expensive Patterns,

SHAFTING, PULLEYS AND HANGERS,

A SPECIALTY,

LEFFEL TURBINE WATER WHEELS,

STEAM ENGINES AND BOILERS,

MIXERS FOR FERTILIZERS AND CHEMICALS.

POOLE & HUNT, Baltimore.

FILES & RASPS,

Established 1868.

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1860.

Chas. Spruce & Co.,

Manufacturers of **HAND CUT**

FILES AND RASPS.

Every File warranted.

CHALMERS & MURRAY,

Sole Agents, 76 Reade St., New York.

SPENCER & UNDERHILL,

94 Chambers St., N. Y., Agents for

American Screw Co.'s Wood, Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.

O. Ames & Sons, Shovels, Spades and Scoops.

A. Field & Son, Tacks, Brads, Nails, &c.

G. F. Warner & Co., Carriage Clamps.

We have also on hand a general assortment of Hardware

THE GIANT PAD LOCK.

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

"Superior in Every Respect."

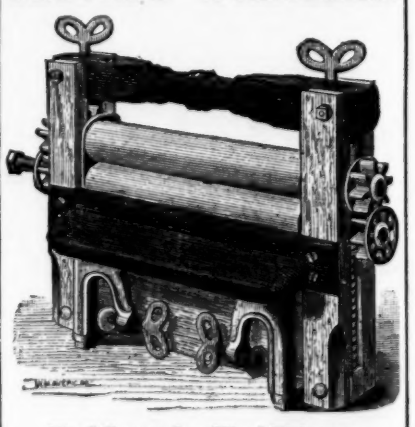
This is one of the **best selling Locks** in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted.

Orders solicited. Address as above

Lock Box 105, Bridgeport, Conn.

Keystone

CLOTHES WRINGERS.



Wood Frame Cog-Wheel Wringers.

No.	Size of Rolls.	Price per doz.
10	10X1¾	$60.00
12	10X1⅞	63.00
16	11X1¾	68.00
18	11X1⅞	71.00

Wood Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
1½	10X1¾	$51.00
1	10X1¾	54.00
3	11X1¾	62.00

Self-Adjusting Iron Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
2½	10X1¾	51.00
2	10X1¾	54.00
4	11X1¾	62.00

EVERY WRINGER WARRANTED.

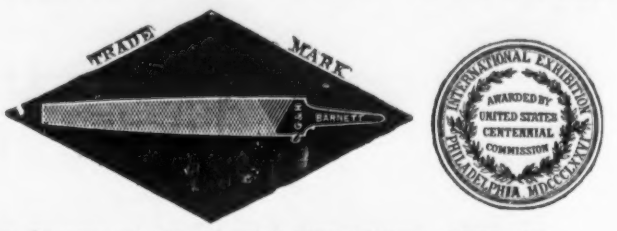
☞ Special rates given for export.

Send for price list of other goods for home and export trade.

F. F. ADAMS & CO.,

Erie, Pa.

Black Diamond File Works.



Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

G. & H. BARNETT,

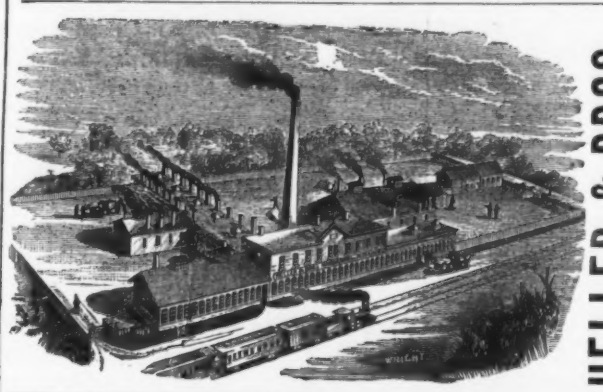
39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted CAST STEEL. 187 Tenth Street, Williamsburgh, New York.

All descriptions of Files made to order. Price List mailed on application. Established 1863.



HELLER & BROS.,

Newark, N. J.,

Manufacturers of Celebrated

American Hand-Cut Horse Rasps and Files.

For Sale by Iron and Hardware Dealers generally.

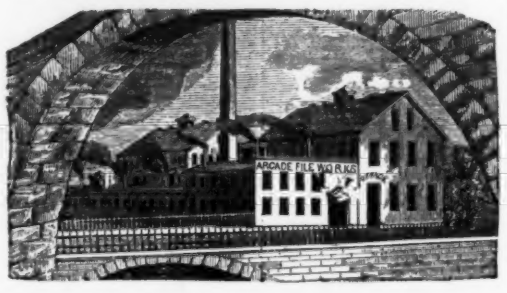
ESTABLISHED 1848.

C. T. DRAPER & CO.

Sing Sing, N. Y.

Manufacturers of SUPERIOR

HAND CUT



FILES and RASPS

Made from Best

ENGLISH CAST STEEL.

Quality guaranteed by written warranty when required.

AUSABLE HORSE NAILS

POLISHED OR BLUED.

HAMMERED AND FINISHED

The Ausable Nails

Are Hammered Hot,

And the Finishing and Pointing are Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is **Fully Guaranteed.**

For Sale by all Leading Iron and Hardware Houses.

ABRAHAM BUSSING, Secretary,

4 Warren Street, New York.

The only **GENUINE D. R. BARTON** Tools

ARE MADE BY

THE D. R. BARTON TOOL CO.,

Cor. Mill and Furnace Streets, ROCHESTER, N. Y.

AGENCIES:

HEATON & DENCKLA, - - 507 Commerce Street, Philadelphia, Pa

H. O. STRATTON, - - - - - 33 Oliver Street, Boston, Mass.

HUNTINGTON, HOPKINS & CO., - - - - - Sacramento.

NATHAN WEED, - - - - - - 4 Gold Street, New York.

Canada as a Field for Manufacturing Enterprise—An Invitation.

The *Maritime Journal*, Halifax, N. S., prints the following: To Messrs. Henry Disston & Sons, saws, Philadelphia; Clark, Reeves & Co., Phœnixville Bridge Works, Philadelphia; Waterbury Brass Co., Waterbury, Conn.; Seth Thomas Clock Co., Bridgeport, Conn.; Washburn and Moen Manufacturing Co., Iron and Steel Wire, Worcester, Mass.; John A. Roebling's Sons & Co., wire rope, Trenton, N. J.; Fairbanks & Co., scales, St. Johnsbury, Vt.; Howe Scale Co., Rutland, Vt.; Brown & Sharpe Mfg. Co., machinery and tools, Providence, R. I.; Russell & Erwin Mfg. Co., screws and builders' hardware, New Britain, Conn.; B. Rowland & Co., shovels, Philadelphia; Nicholson File Co., files and rasps, Providence, R. I.; E. Remington & Sons, fire arms and machinery, Ilion, N. Y.; Burnham, Parry, Williams & Co., Baldwin Locomotive Works, Philadelphia; Pratt & Whitney Company, templet-made machinery, Hartford, Conn; The Meriden Britannia Co., West Meriden Conn.; Stanley Rule and Level Co., carpenters' tools, New Britain, Conn.; George Duncan & Sons flint glass ware, Pittsburgh, Pa., and a number of other eminent manufacturing firms in the United States.

GENTLEMEN: The subject to which we wish to invite your attention is, we think, one which will commend itself to you as of chief importance outside of matters belonging to your home trade.

We are well aware that the manufactured products of the United States are for the most part used up within the borders of your own country, but we know also that you feel the importance of an external trade, and that your government has of late years given great attention to the development of this trade, using its consular system to obtain statistics which are periodically laid before you and which are meant to guide you in seeking new markets for your products.

You have no doubt observed that Canada has been for some time a most valuable customer as a purchaser of your domestic manufactures.

Leaving out from your total annual exports the large items of animals, breadstuffs, cotton, mineral oil, provisions and tobacco, and calling the rest, what they very largely are, domestic manufactures, we find that you sell of these abroad about $100,000,000 worth annually, in which sum we count to the extent of $22,000,000 annually as your customers.

It will readily be acknowledged, then, that Canada's trade relations with the United States are sufficiently important for you to be interested in her fiscal policy as regards manufactured goods.

We do not suppose that you will share the belief of some who declare that, what is called by them, a war of tariffs will destroy the trade relations between the two countries; on the contrary, we as a younger people, yet moving in the same path with you, must of necessity be indebted to you on many occasions for mechanical assistance and for invention which our smaller theater has not yet developed. The only effect of an alteration in our fiscal system will be to reshape, not to destroy, the trade relations of Canada with the United States. Your protective tariff has not essentially affected the vitality of your trade with Great Britain; it has only changed the nature of the wares you took in exchange for those products of yours which she consumed.

No one will assert that, because your importation of railway iron or steel has been reduced to a cipher, the absolute inference is a reduction of your mutual trade *pro tanto;* the effect of the tariff which diminished so greatly England's sale to you of this article, merely necessitated a selection of some more advantageous material for the international barter. In the same way we will continue to trade with you, but the nature of the articles in trade will be modified.

At present we buy largely from you of manufactured goods, some barely above the condition of raw material and others having a high degree of finish, yet all or most of them involving labor which we have available in our own population and raw material which forms part of our soil and our forest growth, or which can as readily be brought to our own doors as to yours.

Here is an exhibit of what we have imported of certain goods from Great Britain and the United States during the two fiscal years of 1876 and 1877:

	Great Britain.	United States.
Pig iron	$925,368	$322,580
Railroad bars, chairs, frogs, &c	4,576,453	1,283,469
Steel bars, rods and plates	344,094	171,480
Iron bars—puddled	239,573	28,349
Iron in rod, hoop and sheet	2,341,178	543,026
Boiler plate, &c	88,868	79,851
Canada plate and tinned plate	1,351,325	95,791
Galvanized iron	265,530	6,056
Nail, spike and rod iron	132,574	19,068
Iron wire, except rigging	184,783	109,043
Spikes, nails, tacks and sprigs	77,540	251,389
Stoves and castings	136,219	372,371
Other iron manufactures	132,450	239,115
Axes, edge tools, hoes, rakes, scythes, shovels	42,789	200,602
Coach and harness furniture	37,448	148,712
Guns, rifles, &c	94,737	78,236
Cutlery	372,934	121,360
Hardware, including locks, hinges, &c	1,362,911	3,116,641
Japanned ware and planished ware	7,080	30,052
Axles—not locomotive	566	16,591
Carriages	8,535	172,347
Harness and saddlery	33,409	80,416
Watches and jewelry	313,900	330,318
Clocks	11,419	100,950
Locomotive engines	13,868	202,714
Stationary "	2,199	53,054
Machinery not otherwise specified	137,317	606,618
Sewing machines	14,397	196,639
Mill and factory machinery	97,640	313,552
Railroad cars	....	42,000
Manufactures of wood, not specified	29,213	815,637
Manufactures of brass and copper	31,693	98,205
Brass sheets and rods	7,400	36,341
Paper	284,742	452,850
Stationery	539,199	385,279
Woolens of all kinds	16,635,496	844,321
Glassware	166,207	616,854
Cottons of all kinds	9,334,103	5,295,643
Hosiery	818,927	74,611
Electroplate and plated ware	126,571	286,277
Sail cloth	209,420	396,846
Total	$41,228,271	$18,653,172

Recapitulation.

Iron material	$10,447,986	$2,656,713
Iron manufactures	2,273,215	4,767,316
Machinery	265,421	1,214,577
Wood, brass, plated ware, clocks and watches, carriages and saddlery, railroad cars, glassware	728,347	2,597,345
Paper, cotton, and woolen manufactures	27,721,887	7,449,568

You will observe that while in textile fabrics Britain is still our largest supplier and that she is also ahead in the grosser manufactures of iron, yet in machinery and a variety of manufactures you have taken precedence.

This would, to some extent, be attributable to the fact that our wants, our social tastes, more closely resemble yours than they do those of Europeans, and that we have grown out of the phase of colonial life in which the metropolis at once dictates the form of tastes and supplies the means of gratifying them.

Aside from this, however, is a stronger reason, it is the more purposeful nature of your manufactured products.

Your establishments, conducted with experience and long study of business and manufacturing needs, have shown their capability of producing wares that combine, in a high degree, finish and fitness along with all the cheapness consistent with thorough workmanship.

Your saws, your locomotive and stationary engines, your rolling mills, and nail and spike making machines, your looms and print-work machinery, your wagon work, your woodwork machinery, your screws, locks and hinges, your mechanics' edge tools, your files; all these are now realized from the inventor's drawings or are the product of special tools which assure a uniformity of accuracy and adaptability that makes them preferred to the superficially cheaper products of European factories.

In this way you have secured a large part of the market which a low tariff has hitherto given the foreigner in Canada, and if the fiscal system now prevailing were continued in force you would, from year to year in the future as you have done in the recent past, take more and more proportionately to England of the trade of our consuming population.

This state of things is now, we believe, at an end; the popular voice has given its suffrages to a party who come into power pledged to adjust the tariff so as to favor all efforts of home industry to replace with its own your products and those of England.

The new tariff, while it contemplates separating our market, hitherto that of a near neighbor with like tastes, from your factories by more than a geographical distance, will, nevertheless, at the same time give you an opportunity if you use it wisely of deriving a greater advantage to yourselves and your capital than if the previous current of trade were not checked.

We cannot but retain all our former preference for your improved weapons in the peaceful contests of civilization, and we will naturally set to work at making them for ourselves; and while, without the thorough experience as individuals which you yourselves have we will be obliged to move more slowly in manufacturing, it follows that the greatest competition we will make will be with the articles hitherto of your industrial production, and that the relative increase in proportion of British and American imports will be transatlantic in its nature.

The grosser wants of our growing population, the supplies to the new settlers, and the articles which England makes to a pattern cast in the same mold for all its world of customers; these will continue to reach us to a great extent, but the articles of your manufacture will be steadily replaced by the results of our own industry.

We will largely require, however, that class of mechanism which is itself the parent of machinery, and this we will buy from England or the States, whichever most quickly or willingly supplies it.

Your course in this juncture then is plain; you are destined to lose steadily the employment hitherto given to your operatives by our market, but you can derive on the other hand a compensating advantage in revenue from your ownership of special tools by opening manufacturing branches in Canada, fitted with duplicates of the latest and most perfect machines and special tools which give you supremacy in your lines; a *fac-simile* of the plant which produces the rails and forgings of the Edgar Thomson Steel Works, or the Baldwin locomotives, or the Disston saws, or the Nicholson files and rasps, or the clock movements of Connecticut, or the scales of Fairbanks or Howe, or Duncan's or another's finished glassware. These will be a great power in your hands to hold for your capital this market, in which you will become employers of labor as well as venders of your wares.

In the competition for possession of this market you will have as manufacturers here a great advantage over others who will seek to establish themselves under the new tariff; they will have to make the drawings and patterns of their machinery; to construct the plant necessary for their completion; to invent or work out, in many cases, the special tools which will be required to make production for the market profitable by its wholesale manufacture. You, on the other hand, will have merely to order from your United States workshops duplicates of the machinery you use there, assured by practical experience of the actual results of the machinery so decided upon. Your estimates of the profit to be made will have in their figures none of the assumptions or uncertainties of an establishment which has not only the market to calculate for labor price or extent of demand, but also the incidentals of a plant which has yet to be created *ab ovo*.

The revival of trade will make another period of prosperous manufacture, and our present area of consumption of goods will be considerably widened; the construction of railways will henceforth assume another phase than in the past.

Hitherto we have built our railways with borrowed capital, the money power of which was converted into the results of English labor before reaching us; in the debts contracted for the execution of great public undertakings our home labor had no share, or a very small share of employment; hence-

RUSSELL & ERWIN MANUFACTURING COMPANY

Manufacturers of HARDWARE.

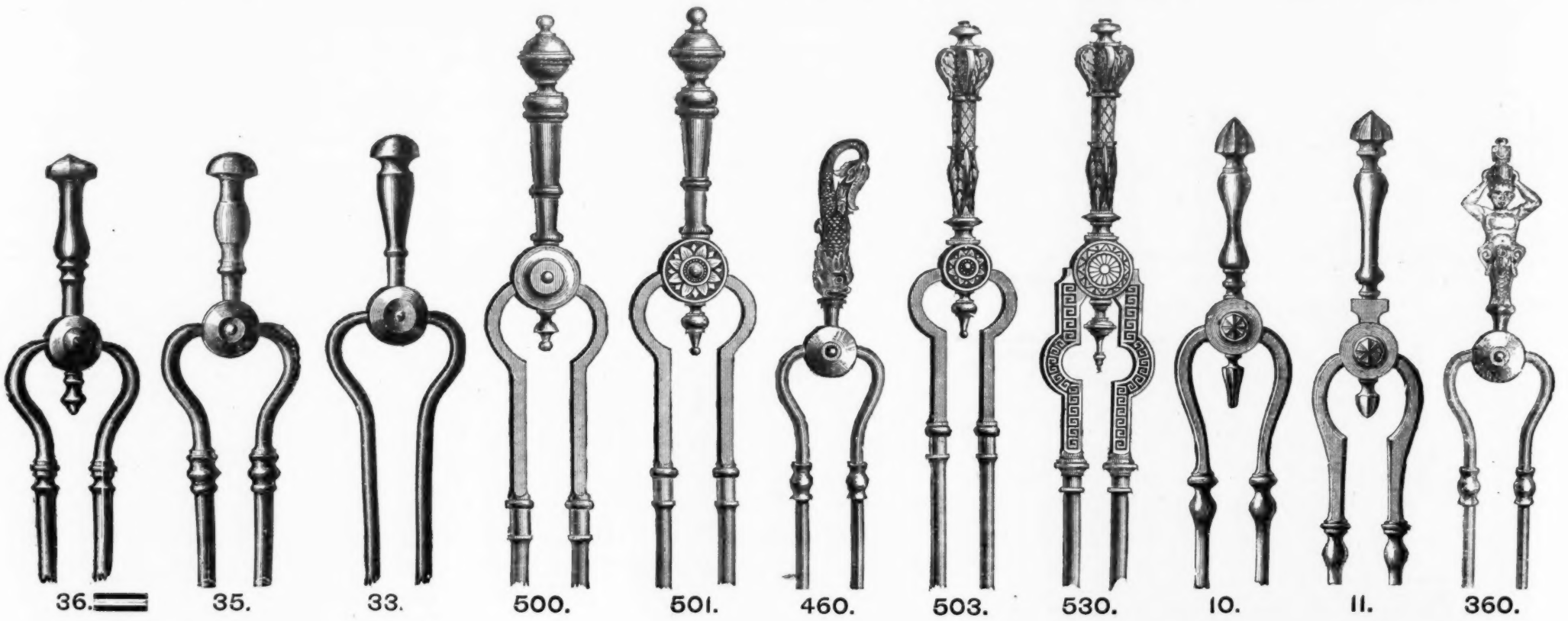
Factories, NEW BRITAIN, CONNECTICUT, U. S. A.

Manufacturers' Agents and Dealers in General Hardware at our

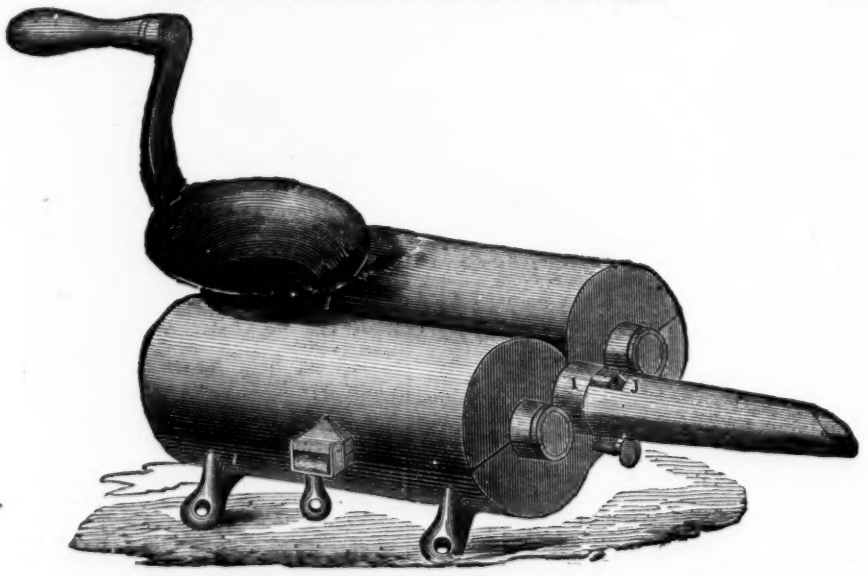
WAREHOUSES.

NEW YORK, - - Nos. 45 and 47 Chambers Street.
PHILADELPHIA, - - - - No. 425 Market Street.
BALTIMORE, MD.,
WM. H. COLE, AGENT, - - 17 South Charles St.

POLISHED FIRE IRONS.

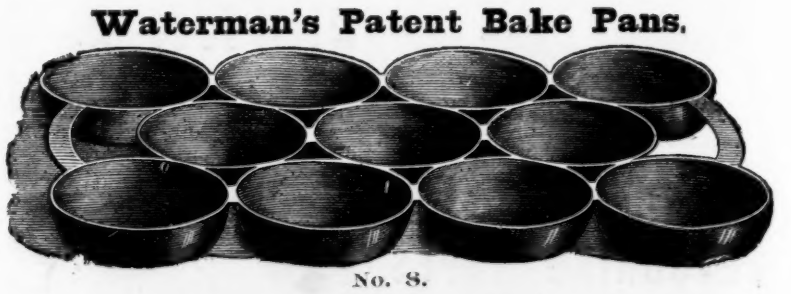


Hale's Patent Meat Cutter.



Coal Tongs.

Waterman's Patent Bake Pans.



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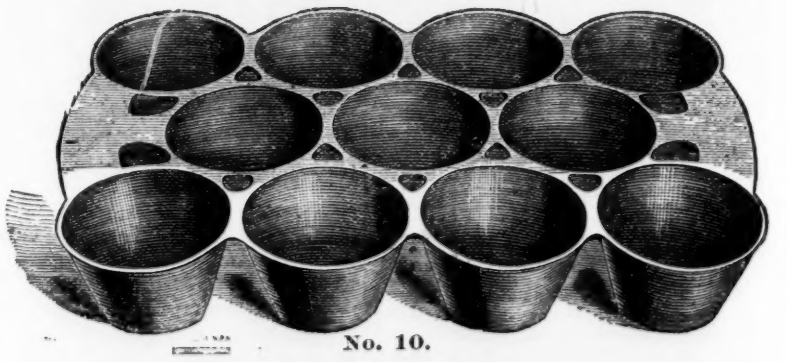

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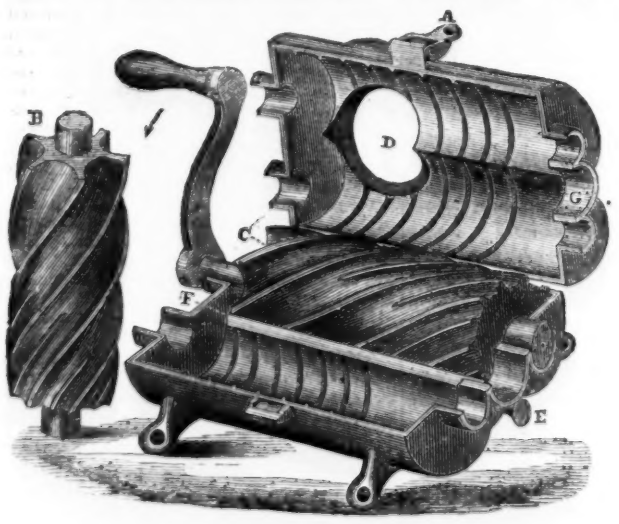
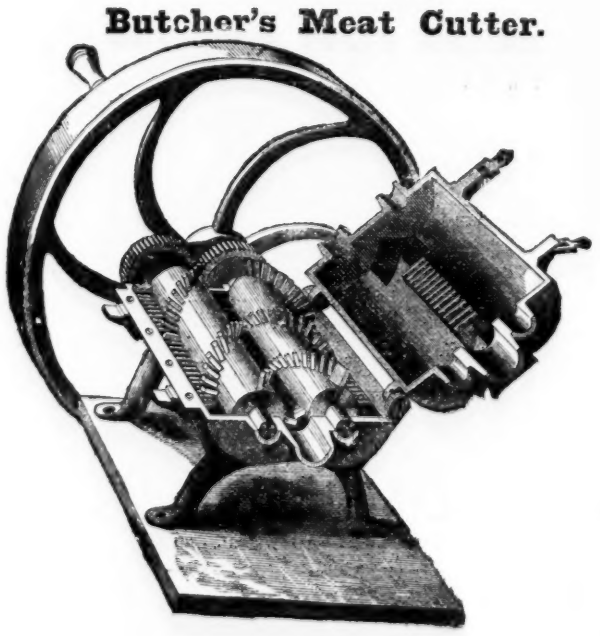
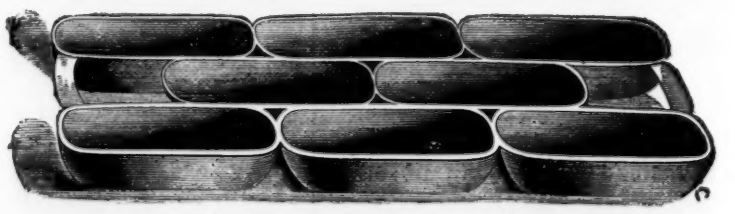
Hale's Patent Meat Cutter.—Open.



Butcher's Meat Cutter.





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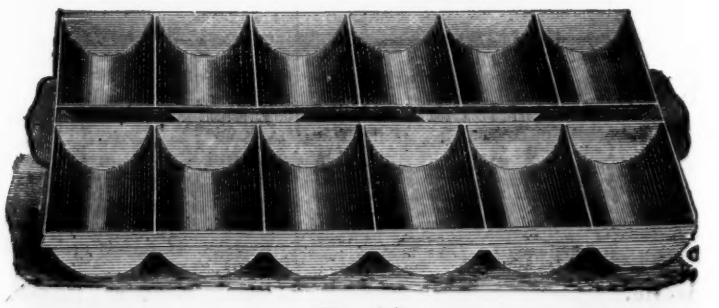


No. 11.

forth, however, a different policy will be followed, the money borrowed in the London market will not go, as hitherto, to enrich the iron masters of Staffordshire or the Clyde, but will fertilize our own fields of labor. We are nearly as enterprising a people in proportion to population as your own in the construction of railways; 6,100 miles, our present length, represents about the same mileage per head of population as your 77,000 miles; and we are now entering actively on another period of railway construction which will most likely call for about 100,000 tons of steel rails every year, as well as 150 locomotives and 4000 cars; and we will increase our use of all the various appliances of the active life of a civilized people.

You see the field offered to your capital and business capacity; you see the advantages you possess over all other competitors. We are sure you will avail yourselves of the opportunity.

In the whole Dominion of Canada there is no province so admirably situated as Nova Scotia for a manufacturing country; it possesses the greatest variety of useful ores; it has coal of the best quality in abundance and in the most accessible localities; it has a facility of floatage by its seaboard line for all material of which freight seriously enhances the cost; it has innumerable water powers, and it has a ready, intelligent population, that whenever it finds its way to your workshops is remarked for quickness in learning and close application to every set task. We can point out to you the Dartmouth Rope Works, the Starr Manufacturing Company's works, and other establishments founded by our own capital under the difficulties of a free-trade system as evidence of the success that awaits your enterprise and your use of advantages belonging to your position.

We invite you to come and see for yourselves what we offer you, and are sure that the visit will profit you and us mutually.

The Baville Stocks and Dies.

We illustrate herewith a novelty in the way of screw-cutting tools which comes to us from France, the invention of Mr. E. P. Baville. It is an improved stock and dies for cutting threads of all kinds. Fig. 1 shows a view of the tool with the top plate removed, with a portion of the stock in section to show the construction. Fig. 2 gives a plan of the essential portions of the die C and guides A A. Instead of an ordinary concave die, Mr. Baville uses one of rectangular form with the thread cut upon two opposite sides. This gives a means for sharpening the tool by simply grinding it upon a stone. The two rectangular blocks A A in Fig. 2 are also threaded and serve as guides to the bolt B. Both guides and cutter have left-handed threads when a right-hand thread is to be cut upon the bolt. In Fig. 1

Fig. 1

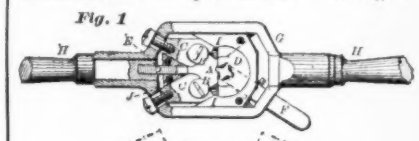
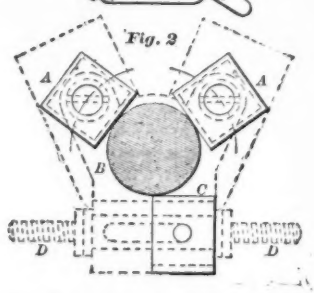


Fig. 2



H H are the handles of the stock, G is the frame that carries the stocks with the cutter and guides. This stock has two recesses for the guide holders C C. The tool holder in this case is of a different form from that shown in Fig. 2 and is operated by the lever F, which is thrown over to the opposite side when the return cut is made. Between the two guide holders C C is a wedge moving by the screw E, which is a prolongation of the handle H. This wedge is arranged in such a way that the guides and cutter can be withdrawn from or advanced to the bolt in radial lines. Hence it is possible to cut a thread upon a great variety of sizes of bolts with a single stock, the only necessary change being in the cutter to adapt the thread to the given size of bolt. When the tool has been run down over the bolt the cutter D, Fig. 2, is by means of the screw D D, upon which it is mounted, run across to present its opposite cutting edge to the bolt, and so makes a cut upward as well as downward, thus completing the thread. This tool is intended to put into the hands of the workman as perfect a means for cutting a thread as we have in the tools used upon our lathes. The cutters in other words, are designed to be really cutters removing the metal by cutting a shaving instead of making a thread by "burring" or pressing the metal up into ridges. The facility for sharpening the dies gives them a long life, while their very simple form enables them to be both cheaply and accurately made. The form entirely obviates the common difficulty from splitting of dies when at work. Mr. L. Bouvier, P. O. Box 96, New York, is the American agent for the patentee in this country.

The French government is laying out a very broad and gigantic scheme of railway construction adapted to the wants of various sections. With the vast sum of $100,000,000, which it proposes to borrow every year for ten years, the ordinary lines of 4 feet 9 inches gauge are to be increased and pushed into districts which are at present without them; next a meter gauge is to be introduced for ten productive districts; and, finally, steam tramways, with a gauge of 2 feet 6 inches, are to be laid on most of the ordinary highways. The speed on these lines is to be about 9½ miles an hour, and on the meter gauge about 13; the estimated cost is $12,800 per mile on tramways and $20,450 on the meter. This grand scheme of expenditure and construction by the government would be anything but wise in this country, but they manage things differently in France, and thus far their financial management has been remarkably successful.

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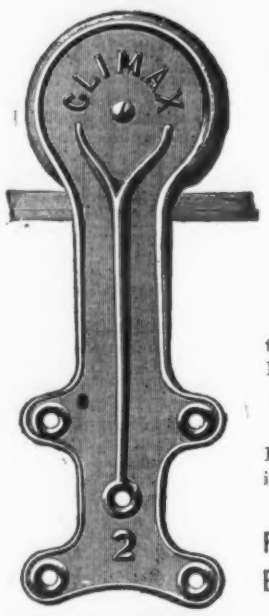

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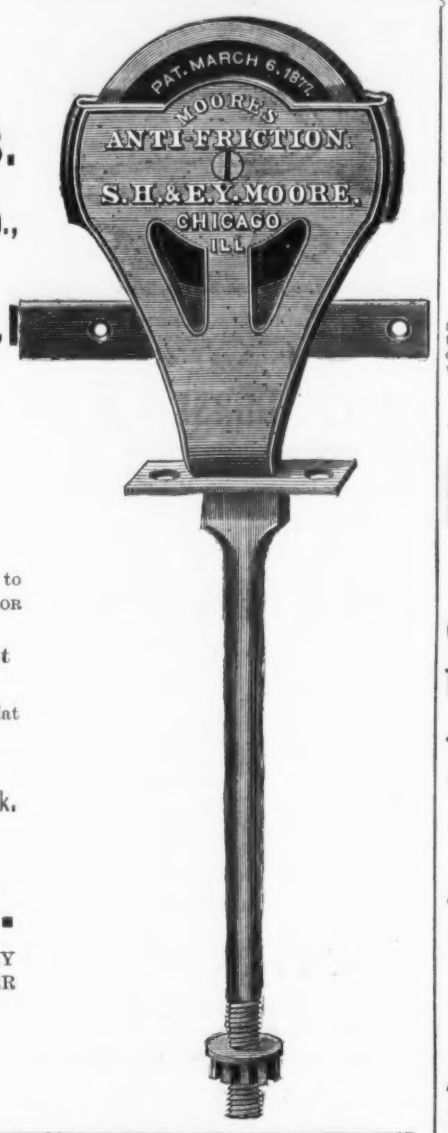

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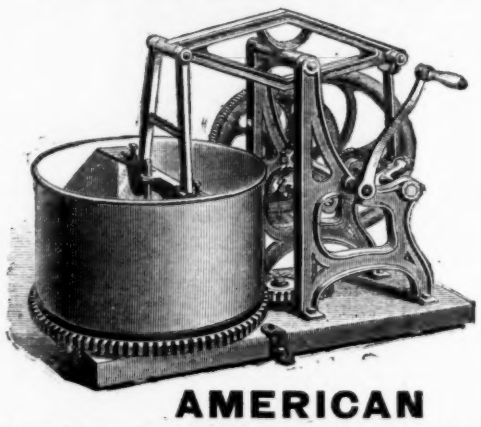

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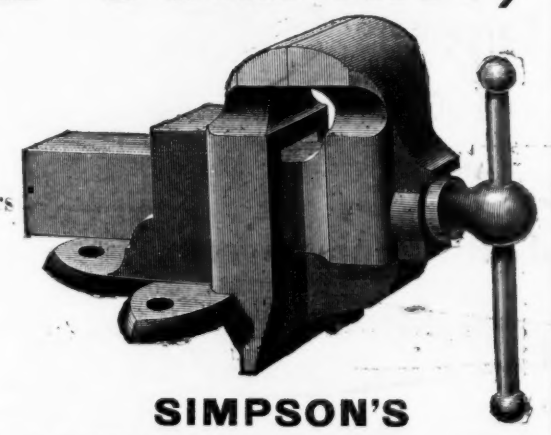

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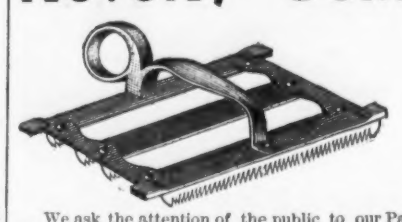

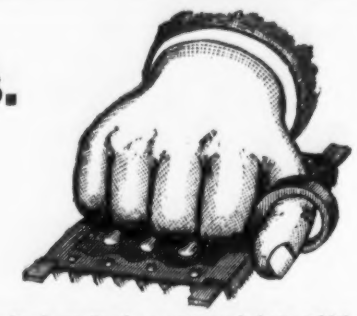

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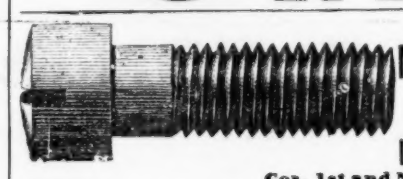

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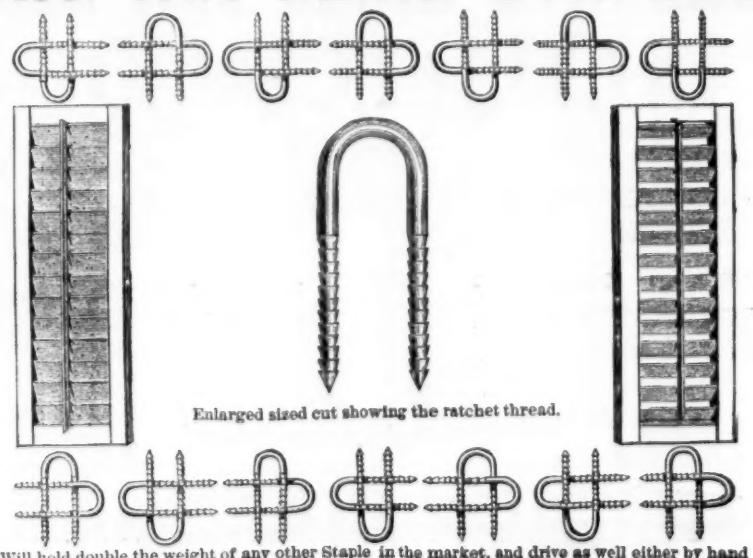

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The Iron Age.

AND

Metallurgical Review.

New York, Thursday, October 10, 1878.

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CONTENTS.

The project of an international exhibition in New York is already being canvassed among our manufacturers, merchants and capitalists. There are some differences of opinion as to whether it should be held in 1883 or 1889—the former celebrating the termination of the Revolution and the latter the inauguration of George Washington as Constitutional President of the United States. Either of these dates is so remote that the scheme is not likely to attract much popular interest at present. There are a a great many preliminaries to arrange, and all this should be done quietly by citizens able and willing to assume the cost and trouble of advancing the enterprise to a point when the public can be asked to co-operate with it. So far as we can learn, all who have thus far been consulted favor the project and believe that New York is the only place in this country where a successful exhibition could be organized. Certain Western cities will be apt to dispute this opinion; but if New York gets up the exhibition the West will undoubtedly co-operate, and all sectional rivalries and jealousies will be forgotten for the time in the desire to make it a credit to the nation. But will it be held, or is it simply talk?

Canada as a Field for American Enterprise.

Elsewhere in this issue we print a document which will be read with much interest by all the large manufacturers of the United States. It is a communication addressed by the *Maritime Journal* of Halifax, Nova Scotia, to some twenty leading manufacturers of hardware, machinery, locomotives, bridges, scales, &c., and to "a number of other eminent manufacturing firms in the United States," inviting them to consider the question of at once establishing branch factories in the Provinces, so as to take advantage of the protective tariff which will be the result of the late political revolution in the Dominion. Starting with the very evident truth that Canada has for some time been a large consumer of American manufactures, and assuming that manufacturers who now have a Canadian trade naturally desire to hold it, the document proceeds to show that while the promised tariff will not put an end to exchanges between the two countries, it will certainly cause great changes in trade, and that an advance in rates of duty to a point which will afford to home industry the measure of protection demanded by the people and promised by the party just elected to power, will place a serious obstacle in the way of further importations of manufactures which, under protection, can be profitably produced at home. We are assured that the high estimation in which our manufactures are held by Canadian consumers, their indispensable utility and general superiority, will naturally induce Canadian manufacturers to essay their production first, and that this country will feel the effects of home competition more immediately and seriously than England, which supplies articles of a different and generally cheaper class. To avert the misfortune of losing a market which, under the circumstances, they will not be able to hold, our manufacturers are urged to seize the advantage of manufacturing for the Canadian market under the Canadian tariff. The argument in favor of such a course is logical and reasonable. Our manufacturers possess certain advantages which Canadian manufacturers, generally speaking, can only acquire slowly and from experience. We have at command the results of years of successful work under favorable conditions. We have the machinery, the knowledge of processes and economies, the patterns, the theory and the practice. The manufacturer in the States who should decide to establish a branch in the Dominion would only have to duplicate as much of his present plant as he might need, and set it in operation under the direction of mechanics skilled in every detail of the business. What he could provide for the net cost of making and transporting, the Canadian manufacturer would have to create *ab ovo*. The former could estimate his profits without making any of the allowances for the expenses attendant upon the establishment of new enterprises, which with the latter would probably be serious in a country that has yet to lay the foundations of a diversified manufacturing industry.

It must be confessed that the suggestion thus conveyed is one which merits consideration. One of our large manufacturing concerns, the American Screw Company, is already on the ground, having a screw factory at Dundas, Ontario, with a capacity of 4000 gross per day. Under such a tariff as the people of the Dominion want and are likely to have, this factory should do a large and profitable business, and if it encounters any important competition during the next few years it will not probably come from Canadian makers. There is now in this country a good deal of machinery not immediately needed here, which, if set to work in Canada, would probably do better than here—at least until Canadian industry is organized upon a much broader basis than now. We do not see how Canadian manufacturers could hope to compete upon terms even approaching equality with such establishments utilizing the experience and profiting by the current progress of manufacturers in the States; and considering the nearness of Canada, and the abundant facilities of intercommunition by railroad, mail and telegraph, we see no difficulties in the way of establishing Canadian branches of some of our leading manufacturing concerns much more serious than those attending an extension of their works in the States. But whether this course is adopted by any considerable number of the firms directly or indirectly addressed will, we think, largely depend upon the provisions of the proposed tariff and the probable importance of the Canadian market under protection. They would have to depend in some degree, at least, upon American raw materials, as Canada does not furnish what they would need. It would be necessary for them to have adequate protection for their brands and trade-marks, and a liberal recognition of their rights under the Canadian patent laws. They would also need satisfactory assurances of immunity from discriminating taxation. Great as their advantages may be, the establishment of Canadian branches is something not to be undertaken hastily or without a full and careful consideration of everything bearing upon the chances of success. It would involve a larger outlay of capital than many of them would be disposed to venture on vague uncertainties, and they would need to know that they would not be merely competing with themselves for a market they could very well have held against Canadian competition without going there to manufacture. In fact, there are a great many things which must be taken into account, including the cost and quality of labor, before such an invitation could be favorably considered; and if our manufacturers do not rush in to preëmpt the field thus opened, it will not be because they lack enterprise or are too short-sighted to appreciate good opportunities. They will go if there is sufficient encouragement, and if they do go we imagine the Canadians will wish they had stayed at home.

British "Commercial Supremacy."

Mr. John Morley, editor of the *Fortnightly Review*, in his recent address before the British Trades Union Congress at Bristol, ventured some utterances which will not bear examination in the light of facts. The keynote of his argument was that, notwithstanding the great disturbances of international trade and the many changes which have taken place, nothing has occurred to shake the foundations of England's commercial supremacy. The causes of the temporary depression which now exists he states briefly to be that "England's greatest customers "have foolishly spent all their money, others "have lost it by misadventure, and others "again have perished bodily. In India the "recent famine is computed to have caused "between four and five millions of deaths, to "say nothing of untold impoverishment; in "China the destruction from the same cause "has been far more sweeping. There has "been a famine in the Brazils. There have "been three bad harvests in succession at "home. The inflation in certain trades "with America has collapsed. Political "events in France and in the East filled the "commercial world with disquiet. All these "things in some of the greatest and most de-"pressed of our industries are enough to ex-"plain the want of trade without going fur-"ther." But Mr. Morley does go further, and shows that anterior to the sweeping misfortunes of late years there was a destructive competition in various industries, more particularly coal and iron and shipbuilding. With the heavy business done during the continuance of the exhaustive wars in this country and Europe there were great profits, reckless extension of factories, overstocked markets, losses in trade and consequent collapse. The result of this state of things has been the loss of an enormous capital; but there have been some countervailing advantages in the reduced cost of living, which have been a vast relief to consumers. Mr. Morley's remedy is curtailment of production, and he sees no better way to effect it than by shortening the hours of labor. He treats American competition with contempt, and says that with our "two-edged tariff" we have cut off on one side foreign competition and on the other all foreign markets for our products. Our sales effected in English markets he regards as only a proof of the desperate straits to which our manufacturers have been driven, with large stocks of goods on hand which they could not dispose of at home and which they have been obliged to sell abroad for what they would fetch.

We do not know that Mr. John Morley's individual opinion on subjects belonging to the domain of political economy carries any great weight, but he represents a class of leaders of English opinion who are blind to many things which men with fewer and weaker prejudices would see clearly, and who are misleading all who put faith in their teachings. England no longer enjoys a monopoly of the advantages which in times past made her the world's workshop. What other countries are gaining in this respect they will not surrender, and the competition which English speakers and writers affect to despise is grinding British commerce as between millstones. During the year 1877 the imports of merchandise into the United Kingdom were of the value of £394,419,682, namely: From foreign countries, £304,865,-684, and from British possessions, £89,553,-998. The total is equal to £11. 15/10 per head of the population of the United Kingdom. The exports of British and Irish produce and manufactures in the year were of the value of £198,893,065, equal to £5. 18/11 per head of population; £128,969,715 being the value of these exports to foreign countries and £69,923,350 to British possessions. To this is to be added £53,452,955, the value of foreign and colonial produce exported, making the total export of merchandise £252,346,020. The total value, therefore, of imports and exports was £646,765,-702, equal to £19. 6/9 per head of population of the United Kingdom. It exceeded £20 per head in each of the four years 1872-75. This does not include £12,182,241, the value of the foreign merchandise transhipped at ports in the United Kingdom. The imports of gold and silver bullion are stated in the custom house accounts at £37,152,799, and the exports at £39,810,619. These make the entire import in 1877, £431,572,481, and the entire export, £292,156,639. This shows an excess of British imports over exports of £139,415,842, or about $677,560,990. We are willing to concede England's greatness in many things, but her boasted "commercial supremacy" is at an end. She is not tottering to ruin, nor is she likely to lose her place among the great powers while she holds her vast empire together. She has immense resources of accumulated wealth and many great and permanent advantages; but she is no longer the workshop of the world, nor will she be again.

Foreign Swindlers and American Dupes.

We feel it to be our duty to warn American manufacturers against a class of swindlers in other countries who, taking advantage of their desire to secure foreign orders, are endeavoring to obtain consignments or delivery on purchase, with promise of payment on receipt of invoice, of valuable lots of American goods. One of these swindlers is a fellow named Mendelson, operating in Berlin. His letters have a business-like appearance, are duly stamped, and read like honest business communications. They always give what purport to be references, but which will not bear looking up. We give below a sample of this person's correspondence, received some time since by a merchant in this city:

BERLIN, Aug. 12, 1878.

Mr. ———, *New York*—DEAR SIR: I have obtained your catalogue and price list and have drawn up a small sample order on another page. If the goods are suitable I shall give you an order for several hundreds for the next season. I shall send you the amount for this order immediately upon receipt of goods in a draft on New York.

Looking forward to yours, I am yours, &c.,
A. MENDELSON.

This was accompanied by several references and a memorandum stating what goods were wanted, with the catalogue prices. Before filling the order the gentleman to whom it was sent referred it to the house who handle his goods for export, and by them it was forwarded to a well-known and respectable correspondent in Berlin. The result was the discovery that Mendelson is a swindler, and that the whole object of the order was to defraud the manufacturer out of the goods he might be induced to send him as samples. His references are pronounced utterly worthless and the whole thing bogus.

We have heard of similar cases before, and have already published correspondence concerning this same Mendelson, showing that he is trying to operate in various kinds of American hardware. We should be under obligations if, when manufacturers obtain convincing proof that orders received by them are sent by swindlers, they would send us the names and authorities. We warn our manufacturers to be on their guard against such swindlers. Irresponsible people who get our manufactures for nothing sell them at any price they can get, and quickly destroy a market by demoralizing prices to such an extent that reputable dealers will not handle our goods. We do not doubt that many of them have learned wisdom from experience in this respect; but some who have had the experience have not yet gained the wisdom. It is, we think, always desirable and often necessary that the manufacturer should make himself acquainted with the wants of foreign markets, and that, so far as possible, he should make an effort, personally or by responsible representatives, to promote the introduction of his goods; but their distribution can always be most safely and satisfactorily effected through resident agents, who will scan credits closely and look sharply after collections.

American Trade Statistics for Seven Months.

The Bureau of Statistics at Washington has published the statistics for the first seven months of 1878, as compared with the same period in 1877, showing that after deducting the precious metals our import of commodities free of duty amounted to $77,299,638, against $91,653,156 during the same period in 1877, and that of dutiable goods to $172,944,771, against $205,631,054; together $250,244,409, against $297,284,210. Deducting therefrom our foreign export, without counting coin and bullion, $8,459,-768, against $6,634,272, we find a net import during the period named of $241,784,-641, against $290,649,938 during the corresponding months of the previous year. Our export of domestic goods, on the other hand, has been $408,089,508, against $326,-130,291. There consequently results in our favor during this brief time a so-called trade balance of $166,304,867, against $35,-480,383 in 1877, as the following recapitulation will show:

	Seven Months. 1878.	1877.
Net import	$241,784,641	$290,649,938
Export	408,089,508	326,130,291

Between a decreased import and an increased export of merchandise there is a difference in our favor in this foreign trade movement of $130,824,484, explaining sufficiently the lessened export of the precious metals shown in the following table:

COIN AND BULLION—SEVEN MONTHS.

	1878.	1877.
Import	$19,632,810	$12,634,549
Export	19,933,865	37,679,460
Excess of export	$ 301,053	$25,044,911

The movement in metals and manufactures of metals during this period of seven months has been as follows, values being reduced to thousands of dollars:

	Quantities. 1878.	Quantities. 1877.	Value. 1878.	Value. 1877.
Block tin, cwt.	71,991	77,375	1,187	1,269
Manufrs. of brass	....	....	148	143
Coal, bitum., tons	....	....	1,028	728
Copper ore, cwt.	3,566	321	24	3
Ingot copper, lbs.	112,017	992,337	15	149
Manufrs. of copper	....	....	184	234
Pig iron, lbs.	70,303,050	83,316,408	746	864
Castings "	50,168	45,250	3	2
Bar iron "	34,122,265	29,234,083	767	723
Band, hoop & scroll iron, lbs	2,598	328,612	....	10
Sheet iron, lbs.	545,326	1,385,273	28	63
Old & scr'p ir'n, t'ns	2,594	3,652	30	37
Hardware	....	....	49	54
Anchors, cables & chains, lbs.	817,434	1,359,384	42	72
Machinery	....	....	347	382
Firearms	....	....	188	225
Steel	....	....	696	726
" bars, lbs.	19,649	66,138	1	3
Cutlery	....	....	665	554
Files	....	....	68	66
Saws and tools	....	....	4	12
Other manufrs. of iron and steel	....	....	1,283	1,414
Pig lead, lbs.	986,589	9,407,278	46	431
Manufrs. of lead	....	....	1	29
" comp. metal	....	....	387	434
White lead, lbs.	1,019,626	1,649,902	63	107
Red lead and litharge, lbs.	126,007	117,400	7	7
Tin plates, cwt.	1,281,687	1,297,069	5,577	6,233
Manufrs. of tin	....	....	40	20
Spelter in slabs, lbs	770,364	763,363	35	36
" sheets "	459,528	624,777	26	37
Total	.....	.....	13,685	14,985

FOREIGN EXPORT.

	Quantities. 1878.	Quantities. 1877.	Value. 1878.	Value. 1877.
Pig tin, cwt.	626	156	12	3
Manufrs. of brass	....	....	4	1
Coal, bit., tons	70	1,796	1	5
Copper ore, cwt.	1,906	....	8	....
Ingot copper, lbs.	25,835	133,424	3	17
Manufrs. of copper	....	....	25	125
Pig iron, lbs.	602,600	683,320	5	5
Castings, lbs	....	....	....	....
Bar iron, lbs	422,367	351,553	7	7
Boiler iron, lbs	..	....	....	....
Band, hoop and scroll, lbs	2,000	7,057	....	....
Sheet iron, lbs	73,039	66,106	6	5
Old and scrap iron, tons	76	....	1	....
Anchors, cables & chains, lbs	17,006	22,919	....	1
Machinery	....	....	93	23
Firearms	....	....	1	4
Steel	....	....	13	3
Railroad bars, lbs.	....	421,014	....	8
Cutlery	....	....	3	1
Files	....	....	....	....
Saws and tools	....	....	....	5
Other manufrs. iron and steel	....	....	105	91
Pig lead	778,442	528,336	40	27
Mfrs. of lead	....	....	....	2
" comp. metal	....	....	6	16
" tin, cwt.	12,830	6,486	62	38
Total	.....	.....	395	387

DOMESTIC EXPORT.

	Quantities. 1878.	Quantities. 1877.	Value. 1878.	Value. 1877.
Bells and bronze	....	....	7	5
Manuf'rs of brass	....	....	473	313
Coal, anthr., tons	178,384	189,729	590	630
" bitum., "	168,161	212,083	664	793
Copper ore, cwt.	17,891	17,437	102	95
" ingot, lbs.	7,973,445	6,272,951	1,235	1,250
" manuf'rs	....	....	159	156
Gas fixtures	....	....	38	15
Pig iron, lbs.	1,286,320	6,592,880	14	76
Bar iron, lbs.	3,615,371	3,900,512	93	111
Boiler plates, lbs.	187,900	175,617	6	9
Rails, lbs.	10,494,288	6,578,096	179	130
Sheet, band and hoop, lbs.	128,520	497,616	6	20
Castings	....	....	122	110
Carwheels, number	4,531	4,482	40	72
Stoves	....	....	49	75
Locomotives, number	71	40	729	432
Stationary steam engines, number	54	34	76	24
Rollers	....	....	47	23
Machinery	....	....	1,976	1,613
Nails & spikes, lbs.	5,496,686	5,509,793	160	187
Other iron and steel manufactures	....	....	2,280	2,111
Ingot steel, lbs	82,907	77,800	8	9
Cutlery	....	....	33	24
Edge tools	....	....	483	464
Files and saws	....	....	20	20
Fire-arms	....	....	1,085	4,193
Other manuf'rs of steel	....	....	182	219
Lamps	....	....	130	128
Manuf'rs of lead	....	....	318	32
Cannon	....	....	....	17
Cartridges	....	....	1,390	1,446
Shot and shell, cwt.	1,700	6,095,492	....	1,852
Argentif. ore, cwt.	320	1,462	1	21
Plated ware	....	....	138	86
Presses and type	....	....	88	129
Quicksilver, lbs.	1,383,866	2,576,346	609	1,149
Scales	....	....	124	96
Portable engines	....	....	13	37
Manufrs. of tin	....	....	72	63
Zinc ore, cwt.	9,287	6,347	40	34
Spelt'r in slabs, lbs.	1,524,561	944,506	129	76
Total	.....	.....	14,105	18,358

The foregoing shows that our import of metals and metal goods has been $13,685,-000, against $14,985,000 in 1877. Deducting therefrom the amounts re-exported—$395,-000 this year, against $387,000 last year—there remains a net import this year of $13,-290,000, against $14,598,000 during the seven months of 1877. On the other hand our domestic export of similar goods has been $14,105,000, against $18,358,000 during the corresponding period of 1877, and deducting therefrom the net import, it will be seen that the export has exceeded the import only $815,000 this year, against $3,760,000 last year. On examining our tables it will be seen that the various import items have varied little as compared with those of 1877 if we except the decline in the import of lead. There has been, on the other hand, a notable decrease in the export of various domestic articles, chiefly war material, since the re-establishment of peace in the East. Fire-arms show a falling off of $3,108,000; of shot and shell the export has been insignificant, while last year it summed up some $1,852,000. Aside therefrom there has been a remarkable decline in the export of Quicksilver, amounting to $540,000. Locomotives, on the other hand, show an increase of $288,000, and machinery $361,000; manufactures of lead show a gain of $286,000, and plated ware $52,000.

Taken as a whole the foregoing export statistics, so far as the metal branch is concerned, contain nothing to discourage us; on the contrary, they show great steadiness

in most items consumed in times of peace, and, as we have pointed out, a gain in several.

The Resuscitation of Cuba.

The recent reported decree of the Spanish government, admitting machinery and cattle into the eastern end of Cuba free of duty for one year, excites lively interest among manufacturers and others concerned. But it appears that after investigation the government found it advisable to delay its intended action. Information obtained at the office of the Spanish Consul in this city was not conclusive as to whether the decree referred to has or has not gone into effect. In the absence of any official information, the consul produced a letter from a mercantile source in Havana which says the decree had been intended for promulgation long ago, but the obligation to which the government was bound by its arrangement with the Colonial Bank, which was to receive all duties collected, prevented its being carried into effect. The consul construes the letter as meaning that the government contemplated the admission of machinery and cattle into the two eastern provinces free of duty, but is delayed in its action by a pledge of customs duties to secure a loan by the Banco Colonial. On the other hand, a Havana merchant just arrived states verbally that he understood that the decree is already in force. Mr. Ward, of the Havana steamship line, so unstands it, but by referring direct to the custom-house authorities we learn that the Collector of the Port has as yet received no official notification. There is reason to believe, in any case, that the contemplated measures of relief will not be long delayed in their execution. The Havana merchant referred to, in common with others in the Havana trade, attributes much importance to efforts making to restore the fertile districts now well-nigh devastated, and of which Nuevitas, Baracoa and Manzanillo are the chief ports. Within that area were located about one-fourth of the sugar estates, also most of the coffee plantations, and about one-half the territory devoted to grazing; but no tobacco was grown there of any consequence. A South street merchant, who is largely concerned in the Cuban trade, says that many of his correspondents who were driven out by the insurrection are returning home from their temporary refuge in the other West India Islands, in Mexico, South America and elsewhere, and are anxious to restore their property to its former productiveness, but are so much crippled by the lack of money that recovery must necessarily be slow. Their first necessity is the supply of machinery for crushing cane, evaporating pans, boilers, &c. The representative of one of our large iron works which formerly did a large business with the eastern end of Cuba, says that while they have numerous inquiries only a single order has been received thus far from that section since the return of peace. They were expecting much, but the heavy rains have brought disappointment. An improvement, however, cannot be long delayed.

Mr. Ward, of the Havana steamship line, remarks that Cuban business is fair, but there is no special change as yet, compared with former years. Always at this season more or less of machinery, boilers, &c., is exported from the United States. The future, however, is bright with promise for Cuba. With duties removed the impoverished inhabitants will obtain credit with manufacturers, and by gradual processes of recuperation prosperity will again be restored.

Cars on Some New England Railroads.

The accident on the Old Colony Railroad which occurred on Tuesday has some features that should attract the closest attention of railroad men and engineers. The number killed and injured, and the damage done to the train, strikes the reader at once as being entirely out of proportion to the speed and the violence of the shock. The train at no time exceeded 20 miles an hour, and the collision was with a single baggage car. This is not a matter of surprise, however, to those familiar with the construction of many of the cars upon the Old Colony road. The one English coach of which the road boasted, the only one in the country, is reported to have crushed up like a cardboard box. The other cars, from their "cross framing," were weak, probably having no long sills save those at the side. We regard the accident as on a par with the Revere slaughter of a few years ago, due entirely to weak cars, and we shall expect that all future accidents on several of the Eastern roads will produce similar horrors so long as these weak cars are allowed to run. Three years ago an accident not dissimilar happened to the limited express on the New Jersey Division of the Pennsylvania Railroad, running at a speed of rather more than 35 miles per hour. The ends of two cars were broken and one man killed. No cars were wrecked and only one or two platforms smashed. With such cars as were run on the train wrecked at Wolleston last Tuesday, the probabilities are that everyone on the train would have been killed or mangled. Whatever we may think as to the measure of responsibility which attaches to the managers of the Old Colony road for this and previous accidents, further loss of life from the use of such cars as are now employed on some of the roads running out of Boston will be properly attributable to criminal negligence of precautions known to be necessary for the protection of life and limb. Many of these cars are old and will probably not be duplicated, but we can say from personal knowledge that within a few years cars of the same faulty design of framing and inherently weak at every point were still built at several of the car shops about Boston. With regard to the English coach which, we are glad to say, the Old Colony road lost in the accident of Tuesday, or any other cars of like construction and with side doors, there is no room for differences of opinion among intelligent railroad engineers. Their employment is a crime, and death resulting from their use might be classed as manslaughter without injustice to anyone.

The Mileage of Cast-Iron Car Wheels.

The following very interesting letter is a valuable contribution to the literature of railway operation:

To the Editor of The Iron Age: A recent paragraph in your paper on the mileage of 42-inch car wheels may undesignedly give a false impression as to the "capacity for mileage" of cast-iron wheels of any size. The wheels referred to are stated to have averaged 91,000 miles at the date of the report, and one of them to have reached 148,000. The writer adds: "We do not know whether a better showing than this for cast-iron wheels has ever been made; we are inclined to think that it has never been equaled," and anticipates an average mileage of 150,000 for the lot in question.

The Pennsylvania Railroad Company took out in February, 1876, two pairs of 33-inch Pullman car wheels that had run respectively 110,008 and 159,312 miles, one of the wheels being still worth putting under a freight car. Of the 114 33-inch Pullman car wheels taken out in that month, 29 had run over 70,000, 13 over 80,000 and six over 90,000 miles. The company have record also of one 33-inch wheel that had run 169,000 and another 178,000 miles. The average mileage of all the 33-inch passenger car wheels (worn out) removed during the first six months of 1878 was 73,760. All the above were made under the Hamilton Steeled Wheel Co.'s patents, and all by the Pennsylvania Railroad Co., with the exception of the one reaching 178,000 miles, which was made by Whitney & Sons, of Philadelphia.

The firm mentioned showed a 33-inch passenger car wheel at the Centennial Exhibition that had run 120,000 miles, and has lately received two pairs of 30-inch passenger car wheels of 80,000, and a pair of 28-inch tender wheels of 135,825 mileage, all of their make.

Taking into view the difference in circumference from the above, the 42-inch wheels may, from their data, be reasonably expected to make more than 150,000 average mileage. J. S. WHITNEY.

PHILADELPHIA, Oct. 4, 1878.

The facts stated by our correspondent are exceedingly interesting, not only as showing the extraordinary life of the American cast iron wheel, but because they prove very conclusively, what has for a year or two been a conviction among railroad men, that the quality of cast iron wheels has been steadily improving. At the meeting of the Master Car Builders' Association, at Cincinnati, Ohio, one of the questions proposed for discussion was "Car wheels—their mileage and breakage." At the monthly meetings at the association rooms in this city during the winter, the subject was very thoroughly discussed by both car builders and wheel makers. Notes were compared, figures obtained, and the freest interchange of ideas took place. The car builders and railway men during the discussion became pretty generally determined to obtain more accurate statistics in regard to the life of their car wheels, and the wheel makers determined that it was not only possible but profitable to improve the quality of their wheels. While we believe that the wear of the older wheels has been underestimated, we are equally certain that the quality of wheels has been vastly improved. The figures which Mr. Whitney gives show several facts very plainly. Taking the case of the tender wheels, 28-inch, which have made 135,825 miles, it is evident that the chill upon the tread must have been exceptionally hard and tough, as the brake action on these wheels is extremely severe. The iron must have had a high tensile strength to stand the hard work beneath a tender. We presume it would show upward of 30,000 pounds per square inch. Lastly, the wheels must have been truly circular and accurately matched upon the axle, or they would have given out long before 130,000 miles were reached. The difficulties of securing these conditions are often urged against cast wheels, but the facts seem to be that a first-class cast wheel is as nearly a circle as a hard-tired steel wheel when fresh from the lathe. We shall not be surprised to see 42-inch wheels of equal quality of metal and workmanship make 200,000 miles and even more, as that figure would not be as remarkable as the figures given by Mr. Whitney for the smaller wheels.

The recent returns of the breakages of wrought-iron wheels on the German railroads, show that those in use in that country are by no means equal in any respect to the American cast wheel. They have the inconvenient habit of going to pieces without warning while the train is in motion—a thing that a good cast wheel never does.

An English steamer lately made a stop at Lord Howe Island, in the South Pacific. It had just 25 inhabitants—men, women, and children—who very rarely heard anything of the rest of the world. They were said to live in happy content, their only complaint being the want of a schoolmaster and of clothing.

New Publications.

IRON AND STEEL WORKS OF THE UNITED STATES, 1878. Published by the American Iron and Steel Association. Price, $2.

Mr. Swank's directory of the iron works of the United States, comprising the names, descriptions, location, ownership, &c., of blast furnaces, rolling mills, steel works, Catalan forges and bloomaries, is the only directory of its kind, and is an invaluable work of reference for all directly or indirectly connected with the iron trades. When first published this directory contained some inevitable though unimportant errors. Some furnaces were omitted and some were named without particulars, owing to the inability of the compiler to get the information sought. Mr. Swank has devoted much time and attention to its revision, and in its present shape the information given concerning each iron works is as full and complete as could be desired. The only improvement we could suggest would be to number the paragraphs, and in a quarterly or semi-annual appendix note opposite corresponding numbers which furnaces and mills are in operation and which are not. This would make the directory of still greater practical value; and considering the fact that Mr. Swank receives regular returns from the trade, the work of revising the supplement twice a year would not, perhaps, be greater than he could undertake. We think our suggestion will meet with approval by the whole trade, and as Mr. Swank is always ready to give the trade what they want, he may find it worthy of his attention.

A MANUAL OF THE MECHANICS OF ENGINEERING AND OF THE CONSTRUCTION OF MACHINES. Vol. II, Part II. Heat, Steam and Steam Engines. By Dr. Phil. J. Weisbach. Translated by A. Jay DuBois, Ph. D. John Wiley & Sons, New York. Price, $6.

The second part of the second volume, which is now complete, of Prof. Weisbach's great work, has been rendered accessible to English and American readers, and we can only tender to Prof. DuBois our congratulations for the prompt manner in which it has followed the first volume. It makes his promise of an early publication of the third volume, the original of which is now being revised by Prof. Herrmann, of Aix-la-Chapelle, one upon which readers may depend.

The part before us contains chapters on the properties of heat, on steam, steam-generating apparatus and on the steam engine. Heat is very fully treated in upward of 70 pages, and as the theoretical researches on the subject have done very little to affect results arrived at years ago, minor changes or additions from the original were called for. We notice Siemens' pyrometer and a short abstract of Pictet and Cailletet's liquefaction of the permanent gases. In the chapter on steam a series of tables on the properties of saturated steam, and the recent calorimetric trials of fuels by Scheurer-Kestner and Meunier-Dollfus are the only additions. As the rapid and incessant progress made in steam generating apparatus makes every work on the subject obsolete in a decade, it is not to be wondered at that Weisbach's treatise is somewhat out of date. This defect has been clearly recognized by the translator, who with the co-operation of Mr. Richard H. Buel, C. E., has carried the work as near the present standard of acknowledged good practice as the scope of a text book, which can only recognize fully established progress, will admit. The same applies to the steam engine, which, however, will be treated in detail in the third volume. The publishers announce that they will soon issue a supplement to the present volume, which is to take the place of the third volume until the latter is also given to the public.

Prof. Weisbach's work needs no recommendation, and it is but just to the translator to say that whatever defects it possesses have been carefully corrected by the supplementary notes and data published with the text. He has succeeded in doing this without giving the work a disjointed character, and we hope that this success will enable him to cope with the more difficult task before him. The printing is admirable, and the tables of figures are very clear. We regret that the beauty of the original illustrations has somewhat suffered by reproduction, and we would in a friendly way point to some mistakes in proof reading, such as the sudden reappearance of "steam generating apparatus" in the chapter on the steam engine, pp. 285 and 301, and the plural of the German Thermometer as "Thermometers," on page 3.

AUTUMN LEAVES UPON THE LEHIGH.

We are indebted to the Crane Iron Company for a copy of a very beautiful and interesting publication bearing the above title, which describes, with excellent illustrations, the principal scenes of interest along the line of the Lehigh Valley Railroad, including some of the principal iron works and manufactories. Among the points of interest illustrated and described are Easton, with its La Fayette College; Bethlehem, with its public and historic buildings, the structures of the Moravian colony, the Lehigh University and the Bethlehem Iron Company; Allentown, with its picturesque surroundings; the Crane Iron Works at Catasauqua; Portland and the Coplay Cement Works; the Warrington Quarry at Slatington; the Lehigh Emery Wheel Works at Weissport; Mauch Chunk, with its wonderful scenery and remarkable engineering; the cataracts of Glen Onoko; the Wyoming Valley, with its industries; Oliver's Powder Mill at Laurel Run; the Hazard Wire Rope Works at Wilkes-Barre and the Wyoming Valley Stock Farm at Pittston. The little work is happily named. We know of no place in the world more beautiful in October than the Lehigh Valley, and nowhere else have we seen such a wonderful panorama of color as may be seen from a car window along the Lehigh Valley road as it follows the windings of the river. This section of Pennsylvania is always interesting, but doubly so in the autumn months, and we have more than once made the journey for the pleasure of seeing the wonderful brilliancy of its autumn foliage.

MAXIMUM STRESSES IN FRAMED BRIDGES. By Prof. Wm. Cain, A. M., C. E. Van Nostrand's Science Series, No. 38. Price, 50 cents.

This is a reprint from Van Nostrand's *Eclectic Magazine*. The subject is one of such momentous importance that every standard contribution to its literature merits the attention of constructors and engineers. Prof. Cain determines the unit strains by a modification of Launhardt's formula proposed by himself, considering it to be peculiarly adapted to the comparison of trusses. He has fully developed the maximum stresses which can ever occur in the web members or chords of bridges. The work, which has the usual somewhat disadvantageous shape of the "Science Series," is fully illustrated, and numerous tables and examples give it value both as a guide in study and as a book of reference.

THE SANITARIAN.

We are in receipt of the October number of the *Sanitarian*, a monthly magazine which has in the five years of its existence proved its ability to occupy and fill in a highly creditable manner a field of research which is still neglected by many whose province it is to ameliorate the conditions affecting public hygiene. While the main burden of this duty necessarily falls to professional men, their efforts cannot be thoroughly successful unless they are seconded by every intelligent citizen, every householder, architect and builder. The rudiments of sanitary science must become universally known, and by contributing to foster popular interest and instructing the general public, as well as a smaller class of strictly professional readers, the *Sanitarian* possesses a large and, we hope, a rapidly-growing sphere of utility. The number before us contains an excellent article on "Sunlight and Solarization in Health and Disease," by E. C. Angell, M. D. Dr. John D. Tripe touches an important subject in his paper on the "Relations between Sewer Gas and Diphtheria," in which he cites a number of striking cases. A timely and valuable contribution to the hygiene of the school comes from Dr. E. Seguine, who, in his paper on the "Intervention of Physicians in Education," pleads for a daily medical survey of children at school, with a view not only to correct defective sanitary conditions of the class rooms or the surroundings of the school, &c., but as a quarantine measure against the introduction of zymotic or contagious diseases, and as a means of detecting and counteracting infirmity of the eyes and the ears, and to train, physiologically, the senses and the hand. The papers contain much that is suggestive of progress in hygiene and will impress the thoughtful reader with the magnitude and variety of the work that must be accomplished before a state of affairs thoroughly satisfactory is reached. The Editor's Table is, as usual, an excellent summary of what has come before public notice during the course of the month.

Scientific and Technical Notes.

A simple form of

TANGENT GALVANOMETER

has been recently introduced by Louis Schwndler. The galvanometer has two coils—one of thick wire and few convolutions, offering no more than 1 ohm resistance; another of thin copper wire, having a greater number of convolutions, and a resistance of 100 ohms. Two sets of resistance coils for use with the above coils, respectively, one of 20 and 200 ohms, the other of 1000 and 2000 ohms. A simple reverser allows the readings of the galvanometer to be taken from either side of zero. In order that the strength of the currents passing through the coils may be as nearly as possible proportional to the tangents of the deflections, the magnet has a length of less than one-fifth of the diameter of the deflecting coil. The small magnetic needle carries a thin aluminum pointer fixed in the right angle of the needle. In order that the needle after each deflection may come sooner to rest, the aluminum point carries small wind fans of the same metal. When closing the box the needle is taken off its pivot.

A magnificent illustration of the

OCCLUSION OF HYDROGEN BY PALLADIUM

may be found, according to Prof. B. Silliman, in the exhibit of Johnson, Mathey & Co., at Paris. They show a disk of palladium within which 1000 volumes of hydrogen gas are condensed by occlusion. The original palladium disk had exactly 100 millimeters diameter and a thickness of precisely 2 millimeters. It was, before imbibing the enormous volume of hydrogen which it now holds, perfectly flat; and it was gauged by a ring within which it exactly fell. Now, this disk is a concave mirror, the new form being occasioned wholly by the molecular displacement due to the hydrogen it has absorbed; it no longer enters its gauge-ring, and its 100 millimeters diameter are now enlarged to 102.5 millimeters, and its original weight of 187.3775 grams is now increased to 188.2882 grams. This remarkable absorption of hydrogen has no visible effect upon the luster, color, or tenacity of the palladium alloy of hydrogen, if indeed it be an alloy. The hydrogen absorbed by palladium enters this metal when it is made part of the circuit of a voltaic battery, the gas usually evolved at the positive pole being then taken into the substance of the solid metal.

Hitherto the attempts made to construct a single fluid battery have almost invariably been failures. Recently, however,

PULVERMACHER'S BATTERY

seems to offer a solution of the problem. It consists of a porous jar surrounded by a silver wire which is rolled spirally, and is used as the negative pole of the element. The exciting fluid, dilute sulphuric acid, caustic potash or salammoniac solution, is filled into the porous jar, through which it percolates by capillary attraction. The positive pole is a rod of zinc, the top of which is covered with caoutchouc in order to avoid accidental contacts which might short circuit the battery. The small spirals of silver wire must be far enough apart not to cause capillary attraction to take place between them. The electro-motive force of a couple charged with dilute sulphuric acid is nearly 2 volts.

The *Industrie Progressive* gives the following methods for

COLORING METALS.

Metals may be rapidly colored by covering their surfaces with a thin layer of sulphuric acid. According to the thickness of the layer and the duration of its action there may be obtained tints of gold, copper, carmine, chestnut brown, clear aniline blue, and reddish white. These tints are all brilliant, and if care be taken to scour the metallic objects before treating them with the acid, the coloring will suffer nothing from the polishing. On making a solution of 640 grains of lead acetate in 3450 grains of water, and warming the mixture to 88 or 90 degrees, it decomposes and gives a precipitate of sulphuret of lead in black flakes. If a metallic object be immersed in the bath, the precipitate is deposited upon it, and the color produced will depend on the thickness of the deposit. Care must be taken to warm the objects to be treated gradually, so that the coloration may be uniform. Iron treated in this way has the aspect of bluish steel; zinc, on the contrary, becomes brown. On using an equal quantity of sulphuric acid, instead of the lead acetate, and warming a little more than in the first case, common bronze may be colored of a magnificant red or green, which is very durable. Very beautiful imitations of marble may be obtained by covering the bronze objects, warmed up to 100 degrees, with a solution of lead thickened with gum tragacanth, and afterward submitting them to the action of the precipitate spoken of above.

There are on exhibition at Paris two different kinds of

"MANIFOLD WRITERS."

One of them consists of a metallic "slate" covered with tallow, mixed with one of the purple or red coal-tar colors. A sheet of tissue paper is laid thereon and written on with a hard pen without ink. On taking up the tissue paper the writing reversed is found upon the other side. The tissue paper is now laid (inky side up, of course) on several folds of wetted blotting paper; the writing paper intended for the reception of the impression is moistened (sponged over) with an aqueous solution of gum tragacanth, laid upon the matrix, and placed for a few seconds in a copying press. By these means 20 or 30 good copies can be obtained. The second of the mainfold writers has sheets of varnished paper to write on, with an ink by which the varnish is destroyed and the paper rendered porous. This is then placed on an ink pad, and the writing paper to be employed upon the top. On squeezing, ink is forced through that portion of the paper from which the varnish has been dissolved, and an impression is produced. Seemingly, an indefinite number may be so obtained.

Prof. J. Lawrence Smith of Louisville, Ky., has recently made analyses of the

NEW METEORIC MINERAL, DAUBREELITE,

the discovery of which he announced in 1876. From his present experience he has reason to believe that further research will show the constant presence of daubréelite in meteorites. The mineral occurs in small nodules mixed with troilite; it is black, scaly in structure, and is composed of 68 parts of sesquisulphide of chromium to 29.75 parts of sulphide of iron, closely approaching the formula $FeS + Cr_2S_3$.

Prof. J. C. Draper, in a paper contributed to the *American Journal of Science and Arts*, places on record recent researches on

DARK LINES IN THE SOLAR SPECTRUM,

which possess a close relationship in position to the lines of oxygen, slight differences that exist being within the limits of error of experiment His researches lead him to believe that to prove the presence of oxygen or other substances giving faint lines in the solar atmosphere is a problem which cannot be solved by the comparison of two spectra of small dispersion.

Huitzuco, State of Guerrero, Mexico, is the locality of a

NEW MINERAL, BARCENITE,

described by J. W. Mallet of the University of Virginia. It is black, finely granular and often porous, opaque and with a dull earthy luster. Its specific gravity is 5.3 and its hardness 5.5. The mineral holds 20.75 per cent. of mercury and 50.11 per cent. of antimony; it is a mixture apparently of sulphide of mercury, antimonic acid and an antimoniate of calcium, mercury and antimony.

Glass Notes.—Atterbury's White House, South Side, Pittsburgh, is running steadily, as is McKee & Co.'s, Bakewell, Pears & Co.'s, Fox's, Bryce, Walker & Co.'s, Doyle & Co.'s, Richard Hartley & Co.'s, Duncan & Co.'s and the Keystone Glass Works.——The Ford Plate Glass Company, Jeffersonville, Ind., having completed their annual repairs and made large additions to their works at a cost of $12,000, are now running and working a full force of hands. These works employ 135 workmen, and are turning out 5200 square feet of finished or polished plate glass per week.——It is understood that the difficulties between the employers and employees at the Central Glass Works, Wheeling, W. Va., have been amicably adjusted, and that the pots will be replaced immediately, the fires lighted and work resumed in a few days.——The North Wheeling (W. Va.) Glass Co. filed a certificate of incorporation at the county clerk's office last week.——The following glass works are in operation west of Pittsburgh: New Castle, one 8-pot furnace; Ottawa, Ill., two 8-pot furnaces; Rock Island, Ill., one 8-pot furnace; Buffalo, Iowa, one 6-pot furnace; St. Louis, Mo., one 6-pot furnace; New Albany, Ind., one 10-pot furnace. This firm proposes to start one more 10-pot furnace and run the same with gas. Bellaire, Zanesville and Ravenna, Ohio, will each start one 10-pot furnace at once.——A lithographic letter signed by the "Attorney for F. S. Shively, Bedford, Mass," notifying glass manufacturers not to infringe on the right in iridescent glass making, was received lately at Pittsburgh and afforded much amusement to the South Side manufacturers of that description of glass, as the process is as old as the art of making glass. The idea of issuing a patent on it by our government is regarded as ridiculous in the extreme.

AMERICAN SCREW CO.,

Providence, R. I.,

MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,

AND INCREASING THE ASSORTMENT DAILY.

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

(No. 235.)

INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

REPORT ON AWARDS.

Product: **Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.**

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz:

Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED. Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz, G. L. Reed, J. Diffenbach,
Jas. Bain, J. D. Imboden, Dav. McHardy.
Chas. Staples,

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
Given by authority of the United States Centennial Commission.
A. T. GOSHORN, Director-General.
[L.S.] J. L. CAMPBELL, Secretary. J. R. HAWLEY, President.

After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

On the Working of Fine and Wet Ores in Blast Furnaces, and on the Construction of the Latter.

To the Editor of The Iron Age: A great deal has been said of late in regard to the size, shape and kind of blast furnaces being operated in the different parts of the world. The members of the British Iron and Steel Institute, especially, are taking a great part in the almost universal cry of the iron-producing circle of "How cheap can we make iron?"

Some of the British metallurgists, during the late meeting of the Iron and Steel Institute, have given us some of the ideas of the European iron producer on topics such as on charging with a bell and hopper, an open top, or thimble, or on the modes of working fine, coarse, hard and soft ores, and on the behavior of ores carrying a percentage of moisture and of comparatively dry ores.

As regards charging a blast furnace, I shall not undertake to prove that it makes no difference whether we charge open topped or with cup and cone, but I will venture to say that a fine ore can be worked as well as a coarse ore with cup and cone charger, and that for ores absolutely requiring charging in the middle the bell could be made up cast, and the stock would all be thrown to the center of the furnace. As a case in point I would cite the working of Iron Ridge ore, found in Wisconsin, which is a hematite, fine as sea sand. It averages about 40 per cent. of metallic iron and is self-fluxing in a charcoal furnace, but not in a coke furnace. It was used in the Milwaukee Iron Co.'s No. 2 Furnace alone, and made 420 tons of iron per week without the furnace either sticking or slipping. It was charged through a bell and hopper, and on starting the furnace ore was seen to run down through the coke before lighting it. The same furnace using the above ore (Iron Ridge) was at that time making iron with 22 cwts. fuel to the ton of No. 1 mill iron.

Another illustration of working fine ores was given us in the Forest of Dean, England, in 1854. For 40 years previous to that year they had charged their furnaces with small pans, spreading the ore over the top of the coke. The ore being a fine hematite, it held the gas in the furnace, and the iron produced was of the best up to 1854; but in this year one of the then so-called experts in the art of manufacturing pig iron raised the furnace under his charge 10 feet higher and commenced charging with barrows or buggies, which proved a grand failure. The raw ores actually ran through to the tuyeres without melting. The only remedy of this evil was found to be to return to the former way of charging, which has been a standard mode of charging a blast furnace for the last 100 years in the Forest of Dean, one of the oldest iron manufacturing districts in Great Britain.

I maintain that the chief difficulty is not so much in the top or mode of charging the furnace as putting the bosbes in the right place to break the charge or properly mix it before it is delivered at the melting point. As regards the shape of the furnace below the tuyeres it makes no difference, in my opinion, what the size is. Now, in reference to working ores carrying a great deal of moisture, the writer has worked ore in the Bowery Furnace at Frostburg, Maryland, that carried about 30 per cent. of water and was somewhat softer than ordinary clay when prepared for making bricks. After charging the ore raw for some time and making good foundry iron I tried drying the ore with a kiln constructed for that purpose, but the furnace did not work one whit better than when I charged all raw wet ore, nor was the iron of better quality during all this time. The furnace was lined inside according to the Elgie patent with two fore parts (similar to the Russian oval or oblong furnace), its hearth being 6 feet by 9 feet, with four tuyeres on each side. The bosh was 18 feet by 12 feet and the top 9 feet by 6 feet. The cup and cone by which the furnace was charged were also oblong, being 6 feet by 3 feet. By this plan of working wet ores the furnace would sometimes hang or scaffold 36 or even 40 hours, and it has been known to expand the material and push it up in the furnace as much as 3 feet in one night, which occurred of course only while the material was sticking. The furnace was working the native ores of that place, and averaged about 60 tons per week for about five months, the fuel used being 1 ton 15 cwt. per ton of iron made. I then tried pushing the tuyeres into 15 inches over on the inside, with the result that the fine ore ran down the walls of the lining, so that by pulling out one of the tuyeres we were able to shovel out raw ore. This action of course injured the working of the furnace and the quality of the iron. The change I then adopted was to make it an oblong furnace, with a hearth 6 feet by 3 feet, having two tuyeres on each side. I stopped up one fore part and inserted a tuyere in its place. The bosh remained of the same size as the previous one, but was carried up 10 feet higher in the furnace and the slope made 3 inches to the foot instead of 6 inches as in the previous furnace lining. It then made iron with 2500 pounds of fuel to the ton of iron, or, I may safely say, the saving was 1000 pounds of coke to the ton of iron made, and the make was also increased from 60 tons per week to 140 tons, which proved a great saving in labor alone. The material used was the same in both cases, and in this one case is a good proof that that the one grand secret in building blast furnaces is to put the bosh in the right place to break the charge at the proper point, so that it is properly prepared for the melting zone. No matter how nicely we may adjust it in the charging apparatus, if the boshes do not properly mix it the run will be a failure economically, and perhaps otherwise also.

Now, as regards capacity I maintain that a furnace should be built of such a size that the pressure on the top will be in a certain proportion to the pressure at the tuyeres. For instance, the back pressure should be equal to:

	Pounds.
Hot-blast pine charcoal	1
" hard wood charcoal	1½
" bituminous coal	2
" charred coal	2
" Connellsville, Durham, Welsh or any coke of equal strength	4
" anthracite coal	6

The back pressure not being greater than the above, the furnace will be open enough to allow a natural draft when the blowing engine is stopped and the bell is lowered to allow the gas to escape, thus enabling the operators to see through the tuyeres, without being troubled with any quantity of gas. My mode of ascertaining the back pressure of a furnace is to fit up all ready for blowing, heat the blast up to about 1000 degrees or the heat required after starting the furnace, run the blowing apparatus say 20 revolutions per minute, and note the pressure. After the furnace is started and settled to work, run the blowing apparatus, and regulate the heat so that it is the same as when the furnace was empty, and note the pressure. Then the pressure attained when the furnace is full, minus the pressure attained when the furnace is empty, will be the back pressure of the furnace, and it is my belief that the above table will regulate either coarse, fine, wet or dry ores, soft or hard fuels; in fact it was upon these calculations that I designed the Lucy No. 1 of Pittsburgh, and the Soho in the same ratio, and it has been my experience for the last 20 years that anything beyond the table just given entails a sacrifice of fuel. After running Lucy No. 1 for 4 years or more, and being entirely satisfied with its working (according to Mr. Kloman), Lucy No. 2 was made a copy of Lucy No. 1 as far as the inside lines were concerned. The Soho Furnace was designed proportionately the same as the Lucy No. 1, and should if properly managed have done as good work, as the materials used were the same in both cases.

The Cleveland engineers tell us how to charge, blow and design a furnace after it has been in operation 4 or 5 years, and even as long as 50 years. We do not want to hear so much what is being done in a mistaken way but to alter these mistakes, otherwise all the scientific papers in the world will never benefit us any. When our informants on the shape of an inwall are giving us information, we would like to know the material they intend or recommend to be used in them, the quality of iron expected and the quantity of fuel to be used per ton. Our ex-vice-president of the American Institute of Mining Engineers, in speaking before the Cleveland Institute, said that the Lucy Furnace was a model for the Cleveland district to copy from, and at the last meeting stated that the Soho Furnace when first built was a failure. Yet the two furnaces were designed by the same man, and the inwalls were exactly the same size proportionately with the tuyeres—over 12 inches at Soho and over 14 inches at the Lucy. At the blowing in of both furnaces, both worked the same materials at the start, the Lucy making iron for beams and bridge work and the Soho for galvanized sheet and merchant iron, and yet our "ex-vice" says: "The Lucy is second to none in the world," and "Soho was at the commencement a failure in design." How comes this?

E. J. BIRD.

The Extent of Pittsburgh's Industries.

Mr. J. H. Ricketson, of A. Garrison & Co. of Pittsburgh, in his address of welcome to President Hayes at his reception in that city, gave some interesting figures as to the extent of the trade of Pittsburgh. He said:

It may be therefore not uninteresting for you to know that from our practically inexhaustible deposits, in addition to a million and a half tons consumed at home, we last year committed to the bosom of yonder river 2,670,000 tons of coal to run the machinery, to warm the hearth-stones, to cheer and illuminate the homes of the inhabitants of the eleven States whose borders the water of the Ohio washes as it wends its way to the Gulf. We hope, sir, that in the near future the perils of the navigation of that great natural highway may be improved through national aid. Sixty per cent. of the glass made in the United States is the product of over 38 factories with their 77 glass furnaces.

In our 13 steel works in 1877 we made 25,000 tons of crucible steel alone, an amount equal to one-half of the product of Great Britain of the same grade. This steel is used for an infinite variety of purposes, and is rolled or hammered into every conceivable shape, from a watch spring and a knife blade to the heaviest forging. We also produced last year nearly 53 tons of Bessemer steel rails. In what is known as the Pittsburgh District there are 34 rolling mills containing 900 puddling furnaces. Those in operation last year produced 268,486 tons of finished iron, or one quarter of all the iron rolled in the country. Our last year's product of nails was 600,000 kegs. In our 50 foundries we can melt annually 100,000 tons of metal. In our 12 blast furnaces we made in 1877 about 142,000 tons pig metal, and our capacity is 11 per cent. of the aggregate capacity of the bituminous and coke furnaces in the United States. The jackets of 40 railroad locomotives, shipped not long since from Philadelphia to the Russian government, were made of planished iron rolled here, an article which was for years an exclusively Russian specialty. Russia formerly sent to America 20,000 packs of planished sheet iron per annum. Now Pittsburgh produces 18,000, and only 2000 are imported. We have in this county the largest chemical works in the country, and the largest manufactory of bi-carbonate of soda in the world. The oil fields of Western Pennsylvania produced in round numbers in 1877 thirteen and one-quarter million barrels, of which ten and one-half millions were sent beyond the sea.

Pittsburgh shares with Ohio's Forest City the oil refining industry, and oil refined in this county lights the home of the Italian peasant, the lamp of the German student and the abode of the almond-eyed Oriental.

The entire shipments by rail and water from the Pittsburgh district of coal, coke, iron and its products reach annually the enormous total of 4,500,000 tons.

With an area of 750 square miles and a population of 300,000 people in Allegheny county, we have a carrying capacity in our steamboats and barges of 2,000,000 tons—an amount equal to nearly one-half the registered tonnage of the entire merchant marine of the United States.

THE PARIS EXPOSITION.

GENERAL NOTES.

(From our Special Correspondent.)

THE IRON AGE,
B 3, American Section Exposition Universelle,
PARIS, Sept. 25, 1878.

The awards are now an open secret—at least so far as English and American exhibitors are concerned. Publication in various newspapers of the one list, and an official private notification from the Commissioner General to those in his court who have been adjudged successful by the judges in the other, have quelled all the complaints that arose when it was announced that the day of awardal had been postponed. But these, no longer heard, have given way to others of a nature not unknown to former competitive displays. The story is briefly told when we say that the general cry of incompetency and unfairness raised by many of the foreign participants against juries composed one-half of Frenchmen has been echoed by the English-speaking exhibitors. We do not pretend to decide who is right or who may be wrong in the matter, but it is inexorable logic that where there are 50,000 exhibitors and 25,000 prizes it is not possible that every exhibitor can gain a prize. Rehearings have been asked in many instances. As the rule they have been granted, though some of the demands had better have been dismissed. I know an American exhibitor who has a clever little cabinet hardware patent, and he told me the other morning that he had succeeded in getting a rehearing and now felt tolerably certain of a gold medal. He said he had the thing all "worked," and somebody high in authority assured him that the award would be given. This is but boy's play, of course, discreditable to every one connected in any way with it; but it is a heritage of former world's fairs. The French exhibitors complain bitterest of the delay. They say that while other nations have been informed in advance of the result, they have been kept in the dark. If an official announcement would be ordered, even though the formal presentation is not celebrated for a month to come, they would be satisfied. A tirade of abuse is the result of this feeling. A Frenchman, when he sets his heart on abusing a man, shows fairly those two qualities which the greatest Frenchman of any age said were the distinguishing attributes of his countrymen. Voltaire, you will remember, said that a Frenchman was half tiger and half ape. Commissioner-General Krantz, according to their talk, is to resign, and is to do other equally improbable things. His greatest crime, as Sala puts it, seems to be the unpardonable one of being unable to please everybody. The various complaints have had their due share of effect. A deputation of large exhibitors recently waited upon M. Krantz, and at his instance, it is said, that the late day named for the ceremony of awardal is being reconsidered by the Minister. Should he think favorably of changing the date from October 21, I doubt if it would make much difference at the Champ de Mars, which is now a great camp of discontent.

Tickets of the second series in the National lottery are selling. The first million was disposed of quickly. The second promises to be equally successful. This new batch puts more money at the disposition of the management, who can therefore bring more workmen and overseers from the provinces to study the Exhibition than was at first intended. People have bought tickets very liberally, in Paris and throughout France. The committee of the lottery met last week, and the Minister of Agriculture and Commerce announced that 1,050,000 was the number of *billets* already sold. In the presence of this success, the sum originally designated for bringing to the Exhibition working people unable to pay their own expenses was doubled by the committee, who decided to expend 500,000 francs for the purpose instead of 250,000. Additional money was allotted for the purchase of more prizes. There will be one grand prize of 100,000 francs. The distribution of tickets is prosecuted with vigor by merchants of all classes. Some give them to customers buying a certain amount of goods. Others use them as brilliant advertising means. A large manufacturing concern, thinking the ultimate purpose of letting poor workmen visit Paris at the government's expense so good, have bought many sheets of tickets to help the cause. These they distributed among their help. Like all other subjects brought before a large number of people, this lottery scheme (in a country in which lotteries are forbidden) has been fruitful of scores of strange experiences. One of these is very amusing. There was published in the papers of the other morning a letter from the mayor of a small town in the South of France, in reply to the official circular asking him to aid in the distribution of tickets. His letter was brief, and breathed a little of the spirit of the old Roman consul who sentenced his two sons to death that the laws might be respected. It said that the mayor was very sorry he could not assist in the promulgation. He should advise his people to spend their money in the much more commendable course of buying manure for their farms than in encouraging an act forbidden by the laws of the land, and which the government itself is the first to break.

It is very common in the foreign sections to meet the label, "Offered to the National Lottery." French merchants lead in this, but some of the visitors are close at their heels. One sewing machine is all I have seen in the United States court that has been given. A few days ago the committee deputed to buy various goods for the lottery visited our section and made several purchases.

M. Krantz is organizing a grand concert for the benefit of the Louisiana yellow fever sufferers. It will be given in the Trecadéro festival hall, and advance placards announce it as the most brilliant of the summer.

Germany, who took no prominent part in the Philadelphia Centennial, and who practically is not represented here, talks of an exhibition for the advertising of her industries. Düsseldorf and Berlin are the two cities suggested as appropriate for such a fair. But these things are coming too often now. With a possible international exhibition at Milan and the two Australian ones, each of which is claiming before its birth to be the greater, and now this echo from Germany, merchants are beginning to look upon exhibitions in a rather unfavorable light. The suggestion recently made by a celebrated writer that each decade should have one world's fair seems much more sensible

Speaking of the Sydney and Melbourne shows, I am told that an enterprising Englishman has been industriously going about in the French and English machinery sections securing exhibitors to represent. He has succeeded in getting 50, of whose displays he will take charge during the exhibition in the Australasian colonies.

Gossip about American Competition and the Exposition of 1878.

IV.

"Better not have shown at all than show as we have," Americans have again and again remarked in relation to certain sections of our department. "By no means," has been my reply; "doubtless we compare most unfavorably in steel and iron and their products, both great and small, as compared with our set-out at the Centennial; but it does not follow that because, compared with Philadelphia, Paris is almost nowhere in specimens of American manufacturing capability, America has done herself harm by the show she makes in the French capital. On the contrary, she has done herself lasting good." I am persuaded that the United States has given Europe a conception of her multiform capabilities as a worker in metals, alike useful and precious, that will increase for her the respect which Europe before, from less complete knowledge of our attainments, was beginning to encourage. Of all this the outcome will be that to call any article of manufacture—any product of invention, "Yankee," will be to dub it with an epithet which, if my English friends will allow me the retort, is equivalent, I suppose, to the phrase "Brummagem," as applied to certain English metal wares. "Brummagem" I take to be slang for "cheap and nasty," as some Englishman, I think, has put it.

It is no secret, as I have in previous gossip intimated, that English and Continental manufacturers alike are seeking specimens of American products, as well in the completed article as in the machinery by which it is turned out, that they may put them into the hands of their copyists to reproduce. The considerable number of American wares which by labels proclaim their own sale in some part indicate this. Thus we are complimented if we are not immediately and largely advantaged. "Better have kept the wares at home," retorts my objector. "Not so," I respond. The game of imitation and counterfeit does not always pay, even with the apparently successful, and it is seldom that the genuine is not demanded through the counterfeit. But the sales which have been effected are not nearly all of this class. They relate also to *bona fide* purchases by private consumers who never before thought of acquiring American wares. Once opened up it will be our fault if the traffic is not continued, indeed enlarged. The industrial mission of America will be more than ever understood by Americans after this exhibition as that of having to supply the world with requisites that more than any other country America knows best how to supply.

If Messrs. Wm. Bird & Co., who show the Stow flexible shaft, do not get a continuity of the numerous orders they have already received on behalf of the Stow Company as the result of the showing of that article, I shall be much surprised. I noticed that the people who in crowds stood by the operator as with the shaft coiled around the beam he bored through wood, this way, that way, the other way, in a style with which many at home are familiar, seemed greatly struck with the facility for communicating power under otherwise complex conditions which by this machine was afforded to almost every branch of industry having need of a drill to get through metal or wood. Several English papers I have seen express all the surprise touching this invention expressed in the appearance and the utterances of the crowd. I have had curiosity enough to copy a phrase from the *Times'* report about this one product from Americansteel wire sensibly used. "Pharoah (says that paper) could not have been more surprised at seeing Moses' rod turn to a serpent than we were to see this rope-like affair eating into the planks set on all sides for it to work on."

It will surprise me too if Trump Bros., of Wilmington, Del., do not find that for their Dexter and Feetwood saws they have by exhibiting in Paris obtained custom in Europe which will largely add to the considerable business they are already doing in that comprehensive and most serviceable tool. The invention reminds one of the description which we used to read when we were children of the versatile capabilities of the trunk of the elephant. With equal ease we were told it could root up an oak or pick up a pin. This saw in one size as easily passes through an inch board as in another size it is capable of doing the finest jewelers' work. This seemed to forcibly impress the people whom I so often saw around these implements watching them in operation and examining the specimens of its handiwork. If the people of Tunbridge Wells, England, whose pretty wood work fills so many windows in the pleasure-taking town of this country, do not largely avail themselves of this saw they will have overlooked an opportunity for increasing their productive capabilities never, I should think, before presented to them. Scroll work in choice woods, in bone, in metal and in shell will, I am convinced, be soon more frequently adopted in certain art productions in England as the result of the greater knowledge of the Fleetwood which has been caused by the Exposition.

Visitors were prepared, I think, from what I noticed, to admire Collins & Co.'s (Hartford and New York) axes, machetes, cane knives, picks, &c., which Messrs. John E. Rollins & Co., American merchants of Old Swan Wharf, London, had not too conspicuously set out for them, but I don't think that the majority had expected to see such perfection in finish as the tools displayed. Collins' work showed to advantage by the side of that of the Douglas Edge Tool Co., though not Collins' exhibit. The extent of the space devoted to the Collins goods was ridiculously incommensurate with the standing of the firm. That, however, the Douglas Co. showed so widely as they did I am gratified. To me it seemed that the bulk of the spectators, judging by the goods of the same class made in Europe, regarded the Douglas case as a fairer specimen of everyday work than that of Collins. The buyer from Collins knew, however, that the one was as fair a specimen of a mercantile product as the other was likely to be. Neither firm, in my view, will have cause to regret that they sent to the Exposition. Each will certainly have bettered its position in the Old World markets, and can hardly have failed to get customers from new markets.

Facing about from looking at the Douglas case, I was gratified with the complete exhibit of locks, and of door furniture generally, by Mallory & Wheeler. It caused me no surprise that the exhibitors' representative should desire to impress upon visitors the merits of fastenings which are much more creditable to the firm than the very cheap locks that seem to have sold so well in England. Estimating by the style in which I have seen some of the light work done in English foundries, I am not surprised that English lock makers are in a fog as to the manner in which our fine castings are produced. Messrs. Mallory & Wheeler, like other neighboring exhibitors of similar wares, may be certain that their competitors will now be at greater unrest than before touching the manipulation of American castings. In no hardwares did the superiority of America over every other producing country which showed appear more conspicuously than in these builders' ironmongery goods. France has lately made very rapid strides in her metal castings of the less finished sort. A comparison of what she shows this year with what she showed at her last previous exhibition abundantly attests as much, and the cheapness of what in the builders' ironmongery line she offers at the current exposition is even more remarkable than the style in which the goods have been got out; but France, in useful light iron castings, remains a long way behind the States. It must be the duty of the States to keep her there. To that end it will be needful that no State in the Union rests satisfied with past attainments. If my gossip has any object in it that object is the urging of my fellow countrymen to keep going on. What I said in a previous letter about the effect upon others of America's success in reapers and binders and in handy plows, is equally applicable to light castings, to minor agricultural tools, to small pumps, to everything that is shipped from the States, nay to everything that is sold to be used in the States. With the competition of every country of Europe closely dogging our heels, the measure of every feature of superiority attained must be the measure of the necessity for further commensurate effort to retain that superiority.

Yet, again, it cannot be too frequently remembered, as I begun this letter by pointing out, that America puts into the hands of America's manufacturing competitors the means of intensifying the competition. I have glanced at a few of the numerous labor-saving appliances which Americans are offering to European manufacturers in this Exposition. With the mention of one more I will close this letter, for I have nearly tired myself, and I am afraid I have wearied my readers. I refer to the hand-power molding machine which Aikin & Drummond, of Louisville, Ky., show in the Agricultural Hall. I don't know what business has been done in it at the Exposition, but he will be a very sleepy fellow who, noting what America has done in the matter of light and of machine castings, and having before him a machine than which few Europeans, I venture to think, have seen a superior in any foundry anywhere, does not, if he be in the trade, possess himself of a duplicate.

I may have time to send you from this side another of my gossiping effusions before I return. This I write you from as lovely a spot as it has yet been my happiness to light upon in the old country. VERAX.

GREAT MALVERN, Worcestershire, Sept. 7.

P. S.—I see that figures are now being quoted in respect of the unprecedented attendance at this Exposition, and amazement expressed that notwithstanding the attendance the Exposition does not and cannot pay. I wonder who ever thought that it would pay? Certainly no American having any knowledge of the Centennial, and comparing the way in which that and this has been managed—pay as a show I mean, apart from the incentives to business which it will cause, and apart from the spending for the benefit of Paris that it will have necessitated. As a speculation by France for the good of France it will have been a great success. There is not a reader of *The Iron Age* who will not rejoice that this Exposition has proved that notwithstanding much opposition from her own political factions, the government and the republic can make a great international enterprise as successful as did the government of the empire. If it should come about that the balance sheet of the Exposition shows a deficit of one or two millions which will have to be made up in taxes, no Parisian tradesman should grumble at having to contribute to the deficiency in a much larger sum than is likely to be demanded of him, for he would after all that be a great gainer. And who shall say much less as to the thousands of people who outside Paris have contributed to purvey the requisites of physical existence to the hundreds of thousands of people who have flocked and will yet flock to the Exposition. To keep the doors open another three weeks would be to the further advantage of these people, but it would not lessen the deficit in the Exhibition accounts proper.

Mr. Joseph Bird, brother of Mr. E. J. Bird, manager of the Ætna Furnace at Ironton, Ohio, has started for the United States of Colombia to take charge of and manage a blast furnace.

Wire Rope Traction for the Brooklyn Bridge.

Col. Payne, engineer of the East River bridge superstructure, stated yesterday to a representative of *The Iron Age* that a feat worthy of mention was accomplished in bringing together the several strands which compose the main cables. All four of these enormous steel ropes are finished, exclusive of the wrapping, which is now well advanced. They are the largest of the kind ever made, and doubts were expressed whether it would be possible to bring the strands together so as to make a solid mass around the core; "but," says Col. Payne, "the circumference came out precisely as expected," measuring 49 inches, or more than 4 feet, before the wrapping commenced. This part of the work is going on without interruption from lack of funds. In other words, as stated by Col. Payne, "the suspended portion of the bridge is the only portion which is not suspended."

The great problem which remains to be solved and must soon be earnestly considered, relates to the manner of crossing the bridge. Shall this be attempted by running trains drawn by locomotives or by an endless wire rope? An invention of Col. Payne's has been adopted on a steep grade horse-car line in San Francisco with complete success. Its application involves an essential point, viz., the manner of attaching the cars to an endless rope se that the speed can be under perfect control and without the dangerous jerking which proved so detrimental in the first attempts to operate the Greenwich street road. Col. Payne contends that wire rope traction will save taking a locomotive over the bridge; cars will be run separately and not in trains; it will lessen the strain on the structure and diminish the wear and abrasion of the track, as the locomotive with its fuel and water would equal the weight of the cars, and all practically to no purpose. The plan favored is a pair of pulleys or sheaves by which each car can be attached to an endless rope in constant motion at maximum speed, the movement of the car to be regulated by friction applied to the rollers to retard their motion. When the brakes check the motion of the rollers they impart motion to the cars. The rollers (grooved to receive the rope) act as a bite, seizing the rope, and thus the car is propelled. When the brakes are lifted from the rollers the car stops. A letter from San Francisco says "the roller grip is a perfect success," and this on a grade of 370 feet to the mile, against 200 feet to the mile on the Brooklyn bridge. Thus a heavily loaded dummy and car is taken up the steepest grades and run at any speed desired, equal to or less than the speed of the cable, without wearing the rope or cutting the rollers. How to cross the bridge, in the opinion of some, ceases to be a question.

The Cost of a Strike.—A Bristol correspondent writes: Five weeks ago 1700 men, women and children engaged at the Great Western Cotton Works, Bristol, refusing a reduction in their wages of 5 per cent., came out on strike. They had no society, and the rate of wages having been none too high for some time past they had no resources. Deputations kept on sounding the manager, but the only answer was, "We have an abundant stock in our Manchester warehouses, and if you refuse to take 5 per cent. reduction the mill will be shut for three months." On Monday the 1700 men, women and children returned to work at the proposed reduction. The average weekly wages paid at the mill is £800. Five times £800 is worth £4000. This is what the Bristol cotton operatives have thrown away within the last five weeks.

Advices received at the Department of State from our consular officers at China show that the foreign imports into China during the year 1877 amounted to more than $110,000,000. The following were the principal articles imported: Opium, about $45,000,000; cotton goods, over $28,000,000; woolen goods, over $7,000,000; metals, iron, lead, copper, &c., about $6,500,000. The share borne by the United States in this great commerce amounted to only $1,600,000, while the imports from Great Britain, not including opium, amounted to at least $55,000,000, perhaps $60,000,000. The American Consuls in China, by instruction of the Department of State, are now reporting upon the best means of regaining lost ground in the trade with that country. The Consul at Amoy, writing in regard to the iron manufactures in that country, says: "If samples of American iron were kept on exhibition at the various treaty ports of China large quantities would be sold and a good trade soon be built up. The Chinese do not object to better and cheaper articles than their own because of their foreign manufacture, but they do persist in using the modes and styles to which they are accustomed, and the nation that will accommodate their tastes and that can and will compete in quality and price with Chinese goods, will experience little difficulty in selling its manufactures."

A Philadelphia paper preaches the gospel of honesty to bankrupt debtors. It says very truthfully that "whether a man has become a bankrupt by real misfortune or succeeded in having himself declared such by fraud and misrepresentation, he is none the less in honor bound to meet his legally discharged obligations should subsequent business successes enable him to do so. To fail in this respect is to declare himself a man without moral principle, and one wholly unworthy of future confidence." This is good doctrine, and were its spirit generally adopted we suspect that failures would be much rarer than they are. But the world will have to wait a long time, we fear, before such strict honesty as this becomes universal.

A locomotive on the Chicago, St. Louis & New Orleans road exploded at Vaughan Station last week, killing the fireman, John Smith, and badly injuring engineer Jas. Bechon and conductor J. H. Read. The engine and nine cars were wrecked.

Metallurgical Notes.

BESSEMER VS. OPEN-HEARTH STEEL.

Dr. Siemens, in the discussion on Prof Akerman's paper on "Recent Advances in the Manufacture of Iron and Steel," claims the following points as causing a difference in the product obtained by the open-hearth process when compared with the Bessemer process. In the latter the quantity of steel produced from a given charge of pig is less than the quantity of pig used by some 15 per cent. or so, and to this extent any impurities present are cencentrated, and therefore become proportionally greater in the finished product than in the raw material. In the Siemens-Martin process, on the other hand, the weight of the finished product is about equal to that of the pig charged, the loss of the latter being made up by the reduction of iron from the pure ores charged into the bath, and under these circumstances there is no such concentration of the original impurities of the pig as had been just alluded to.

ESSEN AND CREUSOT.

It is a curious fact that two of the greatest iron works of the Continent were aided at the outset by royal capital. The ill-fated Louis XVI was interested in a foundry at Creusot as early as 1782, while it is claimed that Krupp, of Essen, was started in his brilliant career by Prince William, now emperor, who, it is whispered, is still very extensively interested in the works at Essen.

FURNACE FOR HARDENING STEEL TIRE FLANGES.

Engineering illustrates an interesting furnace used in Austria since 1864 for partially hardening the steel tires of locomotives. The furnace has a small, square, central grate, above which the section of the furnace is circular. The wheel with the tire on it is placed on a projecting ring of the furnace, and the nuts of the tire bolts are slacked to allow the tire to expand from the wheel when heated. The annular space around the tire is then packed with coke in a state of ignition, and blast coming from a large number of nozzles attached to a circular blast pipe is directed at the root of the flange of the tire under treatment. In order to insure uniform heating the wheel is turned around from time to time. When the flange of the tire, which is thinner and therefore heats more rapidly, has become dull red, the wheel is lifted from the furnace and the heated tire is plunged into water of 60° to 70° F. As a fragment shown by the Oravitza-Anima Railroad at Paris proves, this process hardens the steel to a depth of from 0.08 inch to 0.12 inch, especially near the root of the flange. The heating process, which must be rapid to insure its being local, requires only from 6 to 7 minutes. The inner part of the tire must be kept cool by a covering of old cotton waste constantly moistened. It is stated that tires so treated last twice as long as ordinary ones.

ANTIMONY ASSAY.

Becker advocates, in *Fresenius Zeitschrift*, the following method for assaying antimony ores: Melt one part of the ore with three parts of carbonate of soda and potash and three parts of sulphur in a porcelain crucible. Extract with water and decompose the filtrate with hydrochloric acid. Then convert to Sb_2O_4. Generally the porcelain crucible is cracked in the operation.

ACTION OF STEAM ON IGNITED CHARCOAL.

Long has made a series of experiments under the direction of Lothar Meyer, to ascertain whether the carbonic acid produced by the action of steam on ignited wood charcoal stands in any fixed relation to the carbonic oxide. The charcoal was purified by treatment with boiling nitric and hydrochloric acids and thorough washing; a porcelain tube 60 cm. long was filled with it, placed in a furnace, heated to redness and steam driven through it, the gas evolved being collected over water, and analyzed by Bunsen's method. In the first series of experiments the results were not uniform for successive portions of gas, the carbonic acid increasing and the carbonic oxide diminishing. Moreover, two volumes of hydrogen should appear for every volume of carbonic acid and one for each volume of carbonic oxide; but this was not the case, the hydrogen being always too low. These results being confirmed by a second series of experiments, direct tests were made to see if this error was due to an actual loss of hydrogen or to an introduction from without of carbonic acid. On filling the tube with charcoal, displacing the air with hydrogen, closing one end, attaching a potash apparatus to the other and heating, 250 c. c. of carbonic acid were collected in two hours. Hence the discrepancy in the analyses arises from absorbed gases in the charcoal, either carbonic acid directly or free oxygen, and diminishes as the operation continues. Making allowance for this excess, no simple relation appears between the two oxides of carbon. The amount of carbonic oxide formed, however, appears to be determined by the amount of charcoal present, diminishing steadily as this lessens. This can only be explained by supposing that the first action of the steam upon the coal is to produce carbonic acid, and that this, by the further action of the coal, is reduced in part to carbonic oxide, in precise analogy with the ordinary action of oxygen upon carbon. If the carbonic oxide be in contact with an excess of steam, a reduction of the steam takes place. $CO + H_2O = CO_2 + H_2$. In practice, probably all three of these reactions go on simultaneously, the relative quantity of steam and charcoal determining the proportion of the gaseous constituents.

THE DIMENSIONS OF ZINC DISTILLING VESSELS.

There is hardly a metallurgical industry which more urgently requires the energy of engineers for improvement than the manufacture of zinc, and there is none in which a departure from certain rules of detail is so promptly followed by disastrous failure. Numerous petty details of manufacture are closely guarded as secrets, so that only long and patient practical work enables the metallurgist to gain information, the literature on the subject being meager, unsatisfactory and frequently contradictory. Much that is valuable and important has been contributed to current literature within the last

few years by F. A. Thum, who has recently placed on record, in the *Berg. u Hütt Ztg.*, the results of long experience, aided by thorough theoretical knowledge. The shape of the distilling vessels, he says, is now almost the only point of distinction between the Belgian and the Silesian system. Their dimensions are determined by the quality of the clay and by their ability to exhaust in a given time as large a quantity of ore as possible. The diameter and the thickness of the Belgian retorts bear directly upon the time of distillation. If the walls are too thick or the diameter of the retort is too great, the charge will not be exhausted in 12 or 24 hours and the losses of metal are large, or the cost of production is increased. When the best quality of clay is used, as it must always be, the thickness of the walls of the retorts or muffles should not, on the average, exceed 1.4 inch, or 1 to 1.2 at the mouth and 1.5 to 2.1 at the bottom of the vessels, the temperature used being a white heat approaching the melting point of copper. Experience has taught that if the Belgian retort is to work 12 hours and the Silesian muffle 24 hours for one charge, the inside width of the vessels ought to be 6.2 to 6.6 inches. This uniformity of dimensions notwithstanding the great difference in time, is due to the difference in shape and to the fact that the retort is suspended free above the fire, while the entire length of the muffle must always rest on a solid support. The retort is supported at both its ends only, and must be able to bear both its own weight and that of the charge without bending, which limits its length to about 3.77 feet. The utmost hight of muffle used hitherto has been 2.13 feet, the average hight which is best to choose being 2 feet. If the above limit is exceeded, even the best quality of clay will not resist the widening action of the weight of the charge for any length of time. These dimensions are the result of long experience made independently in Silesia and in Belgium, and their uniformity sufficiently proves their importance for the manufacture of zinc. The only dimension which is not strictly limited is the length of the Silesian muffles, which in practice varies between the extremes of 3.94 and 7 feet.

MINING ITEMS.

COAL.

At an interview which the Schuylkill individual operators had with Mr. Gowen a few days ago, he urged upon them the advisability of pooling all their coal next year in the hands of an agent or a commission—not the Reading Company—assuring them that such a course would be to their best interests, as by it alone could united action be secured and a stop put to injurious cutting of rates. So far, however, no steps have been taken by the operators to comply with this suggestion.—*Pottsville Journal.*

Our coal interests are certainly looking up and there is a very marked increase in shipments. In this connection we learn that the Keystone Coal and Manufacturing Company have now received orders to run their mines to nearly their full capacity—300 tons daily—with a prospect of a further increase. This is glorious tidings, and we have every reason to believe that the other mines in this vicinity are doing equally well. The new Hersh mines, known as the Baltimore and Cumberland Coal Company, Limited, are shipping and are well pleased with their prospects. From the Buffalo Valley region we have nothing new to report, nor from the new enterprise near Garrett. What will be done at the head of the Salisbury Basin will develop in a few weeks.—*Meyersdale (Pa.) Commercial.*

Work at the Pine Brook shaft, near Scranton, has been resumed.

The Mineral Ridge Coal Company, at West Monterey, Pa., are running steady.

The coal works in the vicinity of Sutersville, Pa., have resumed work.

The Wellsboro (Pa.) *Agitator* says: We had the pleasure of inspecting the coke ovens at Arnot about the middle of last Tuesday night. Some thirty odd of them were in full blast, and enough new ones to bring the number up to forty were nearly ready to charge. The manufacture of coke has become an important industry at that point, and it is the evident intention of the company to keep pushing it. A large, high building is now being put up for the purpose of crushing and washing the coal for the ovens.

IRON.

The most promising openings that have ever been made in the Menominee Iron Range is the one opened some two miles west of the Vulcan mine, Michigan, which has been christened the Norway. The ore is a rich hematite, free from rock, and is covered with very little surface matter, amounting at present to 5 or 6 feet. Back from the present opening the ground ascends, and the ore seems to follow the rise of the hill. Test pits have been sunk for quite a distance, in each case striking the ore at nearly a uniform distance. At present the Menominee Mining Company, who are the lessees, are taking out about 100 tons of clean No. 1 ore each day, with a very small force of men. From present indications this mine will develop into a very large one.—*Iron Post.*

An exchange says black sand found in Locust creek, near Bethel, Vt., proves to be a fine magnetic ore.

This has been a good year for our hematite mines; of the entire mineral product of the district the hematite mines have contributed nearly, if not quite, 250,000 tons.—*Mining Journal.*

The total shipments of the Cleveland mine for the present season foot up 89,099 tons against a total of 109,005 tons during a corresponding period last year.

The advance in lake freights is to an extent detrimental to the ore trade for the remainder of this season. The advance is something like 85 cents, which is not counterbalanced by a like advance in the market price of ore. The difference in freights will more than use up the profits of mining at the present price, and several sales of ore, which would otherwise have been made for this season's delivery, are now out of the question.—*Mining Journal.*

The shipmments from the Menominee Range mines so far this season have been as follows:

	Gross tons.
Vulcan	27,532
Quinnesec	17,714
Emmett	5,295
Breen	2,211
Total	52,752

It is proper to add that the above table does not include shipments by rail to the Menominee, Depere and Appleton furnaces—only that part of the product shipped from Escanaba to lower lake ports.—*Mining Journal.*

The following table shows the lake shipments of iron ore from the district since the opening of navigation the present year, together with the shipments for a corresponding period in 1877:

	1877.	1878.
From Marquette	468,103	443,943
From Escanaba	312,989	359,480
From L'Anse	52,547	29,915
Total	833,639	833,338

Showing the trifling decrease of 301 gross tons.—*Marquette Mining Journal.*

LEAD AND ZINC.

It is now stated that one of the leading mining and smelting companies in the city contemplate the erection of extensive zinc works in Joplin. Works of this kind should have been established here long since, and now that the difficulty in obtaining an abundance of fuel has been done away with by the building of several railroads into the city, it is sincerely hoped that the project will be carried through to success.—*Joplin News.*

The Joplin White Lead Works have changed hands and become the property of the Lone Elm Mining and Smelting Company, and will hereafter be operated and entirely controlled by that company. The works now ship an average of six cars of white lead per week.

The smelting works of the West Joplin Lead and Zinc Company are smelting 144,000 pounds of ore per week.

The Joplin Mining and Smelting Company have taken a new departure. They now use a battery and set off blasts in the Rooster pump shaft by electricity.

PRECIOUS METALS.

Indians have brought some crystallized quartz to Seattle, containing silver, copper and iron, found in the Cascade mountains.

Wells, Fargo & Co. shipped during the year ending July 1, $2,060.511 of gold bullion and $1,119,635 of silver from Montana.

Bullion Shipments.—Hillside, Sept. 19, $5500; Northern Belle, Sept. 16, $4045.17; 18, $4046.41; 21, $4324.59; Standard, Sept. 16, $18,947.56; Bodie, Sept. 16, $14,000; 21, $13,400; total to date, $152,218; 23, $14,000; Leopard, Sept. 18, $8816.64; Hussey, Sept. 18, $7393.31; Con. Virginia, Sept. 21, $54,049.41; total to date, $106,254.35; California, Sept. 21, $68,523.84; total to date, $148,814.91; Tybo Con., Sept. 16, $8140.49; Hackberry, Sept. 23, $13,000; Independence, Sept. 23, $11,000; Indian Queen, Sept. 16, $4221.98; Black Jack, Sept. 23, $6102.19; Christy, Sept. 25, $5363; Manhattan, Sept. 24, $11,600; McCracken Con., Sept. 23, $8,600.66.—*Mining Press, Sept.* 28.

It is reported that river-bed gold diggings, panning $20 per day to one man, have been discovered about 30 miles from Snohomish, Oregon.

We copy from the *Scientific Press* of Sept. 28 the following statement of the condition of Sierra Nevada: Sinking the main incline is being pushed ahead with all the vigor possible, the bottom in the same lively vein formation; the bottom still cutting at intervals the same regular vein and quartz formation as that which it has exposed for the past 200 feet. Sometimes no ore will be cut for several feet, when a hump or inequality will be encountered, upon cutting into which ore of the richest character will be encountered. On Sunday last an assay of ore thus exposed gave $400 per ton. Yesterday the mine was visited by five different experts, who each took an average assay of the ore thus exposed at the bottom, the lowest of which was $399 and the highest $700 per ton. Passing through this the incline again gave lower assays, the best being $124 and the poorest $24 per ton, but again this morning passed into richer ore than any that has before been shown.

MISCELLANEOUS.

During the week ending September 20 25,380 pounds of quicksilver and 62,259 pounds of sulphur have been shipped from Calistoga to San Francisco.

Partial Destruction of the Passaic Rolling Mill.

Just before midnight of the 5th inst. the Passaic Rolling Mill, at Paterson, N. J., caught fire from some unknown cause. The buildings covered four or five acres and were of wood. The fire spread with inconceivable rapidity, and in a few minutes the flames lit up the entire city and were seen from New York and Newark. The entire fire department was quickly at work, and half the population turned out to witness the magnificent spectacle. There were at least three acres of flames, with bursting boilers, crashing timbers, and the thud of heavy iron falling. The scene was very exciting. The mill was close alongside the Erie track, and an attempt was made to run the 10 o'clock train from New York past; but the fire was so fierce that the train had to be backed out of its reach. There was almost a panic among the passengers, who jumped from the train, thinking they were lost. The fire was got under control about midnight. Two-thirds of the mill is destroyed. The whole mill was insured for $120,000.

This mill was making the ironwork for the New York elevated railways, and was kept running day and night, except on Saturday night and Sunday. No work was done the night of the fire, but four watchmen were in the mill. They do not know how the fire started. The establishment was rushed with work, and 600 men were employed who will now be thrown out.

Mr. Cooke, president of the company, says that the most valuable part of the mill is saved, and he thinks the loss will not exceed $50,000; insured for $75,000. He says

he will rebuild at once, and the fire will not cause much delay. The fire was first discovered near a puddling furnace. The office and the pattern shop, containing many thousand dollars' worth of patterns, were saved. The new mill, machine shop and the rolling shop were saved. The part burned was the puddling department. The Paterson Iron Works, on the opposite side of the track, was only saved by the favorable direction of the wind. Several adjacent buildings were on fire but were put out.

It is the intention of the company to employ in the work of clearing away the débris and reconstructing the burned property as many as possible of the men thrown out of regular employment. If there is no delay in adjusting the insurance payments the building and machinery will be replaced within two or three weeks. No delay will take place in furnishing iron for the elevated railroad, as the company will purchase muck bar and will finish working it in the part of the works not damaged by the fire.

The East River Cables Finished.

The last wire of the last cable of the East River Bridge was run over on Saturday afternoon, and the completion of this part of the work was greeted with the flinging out of flags and loud cheers by the workmen on the anchorages. Six millions eight hundred thousand pounds of wire now hang between the towers and the anchorages, and about 24,000 wires are bound up in the 76 strands that form the four great cables. The estimate of Engineer Roebling was that it would take no less than two and a half or three years to make the main cables, but the workmen have been so expert that the whole process of cable making has not lasted two years. The cables are made about 5 or 6 feet above the position they will occupy after all the settling has taken place. This settling is due to the following causes: 1. The deflection due to the load. This, for steel wires, would be at the rate of 8-100,-000th of a foot per foot of length, per gross ton of strain per square inch of section. 2. An allowance has been made for any forward movement of the saddles on the towers. The uplifting action of the stays in the quarters will also cause a depression in the center of a little more than 2 feet. Then there are changes in temperature which will perceptibly affect the hight of the bridge.

To protect the cables against the oxidizing action of salt air they must be continuously wrapped with charcoal iron wire, bound about them with the precision of thread about a spool, and then this exterior must be saturated with oil, thick enough to produce on drying a viscid gum, and then painted with a thick coat of white lead. This preparation will be moisture-proof. This week the last two strands will be lowered into position, and then the twelve strands of each cable, now swinging loose, will be brought about the seven cables already bound together as a core, and put into wooden squeezers to be held for wrapping. The interesting work of wrapping the cables has been begun, and it is one of the most novel performances yet attempted on the bridge. The cables are held in position by wooden clamps, and wrapped from the towers toward the center of the river and toward the anchorages. Sixteen wrapping machines are to be employed. The wrapping machine is a reel arranged to carry a coil of wire, and it has handles like a pilot's wheel. An iron cylinder made in halves so as to fit close about the cable is worked around by a handle. The wire is first fastened to the cable, and this machine is moved along, slowly winding the wire about the cable as tight and precise as though it were a spool of cotton thread. The wrapping will take three months.

An Extraordinary Pumping Engine.

Prof. Hoppe, of the Clausthal School of Mines, has kindly sent us a copy of an article on the new water-pressure engines constructed at Clausthal, published in the *Zeitschrift für Berg, Huetten u Salinen Wesen*. After the famous Hartz silver lead mines had reached a depth of more than 2800 feet it was found that the pumping system of raising water in numerous shafts with primitive machinery would not in the future be able to cope with the growing bodies of water. A deep vertical shaft was therefore sunk beyond the hanging wall of the main lode, the Burgstaedter Zug, which was to serve for the centralization of the pumping machinery, and a large gallery was driven at a depth of 670 feet below the lowest drainage adit, the Ernst August, to serve as a general reservoir. The problem to be solved was to construct machinery which would utilize the supply of water coming from the main ditch and pond system of the district to raise the mine water from the reservoir level to the Ernst August drainage adit, a hight of 738 feet. The depth of the reservoir below the point where the supply tunnel enters the Marie shaft (95 feet) was 1959 feet. It was decided to use two water pressure engines placed in the reservoir level, and as the water for driving the engines had to be conducted to the drainage level also, the effective head of water was 1209 feet. By this arrangement the necessity of using a long pump rod, requiring frequent repair, was avoided, a difficulty which placing the engine in the adit level would have entailed. The disposition chosen more than counterbalanced the drawbacks of an increased length of pipe and its greater thickness in the lower portions to resist the pressure of 59 atmospheres. The difficulty in constructing a water pressure machine under such conditions was that as water is incompressible and as it transmits shocks in all directions, any sudden changes of the diameter of the vessels through which it flows are apt to prove disastrous to the machinery. The twin engines are direct acting and are provided with a fly wheel, upon the shaft of which are the eccentrics which move the piston valve gear. The gearing had to be so arranged that the time of the stroke of the main piston coincided exactly with that of the valve pistons, but as it is manifestly impossible to preserve so accurate mounting for any length of time, the openings of the valve were not entirely closed at the end of the stroke, by which means sudden shocks are avoided. This, it is true, entails a loss of power, but it was chosen as being the least of two evils. The greatest amount of water to be pumped per machine was 600 gallons per minute. The theoretical power of the water at disposal was 220-horse power, but careful experiments showed that only 76, or 35 per cent., were utilized when the number of strokes was 12. It was found that as soon as the number of strokes per minutes rose beyond 16, the valves of the pumps were subjected to shocks which endangered the machine.

Labor Notes.—Two-thirds of the workmen, to the number of about 250, in the lower Philadelphia and Reading Railroad machine shops, at Reading, Pa., have received the following notice, signed by the foremen of the different gangs: "You will not report for duty until further notice."——The mines, at Richmond, Mo., have resumed at 4½ cents per bushel.——The strike at the Mount Vernon Mines, Pa., still continues.——The coopers who struck for an advance of two cents per barrel, at the shop of Mr. B. D. Moore, Pittsburgh, have decided to go to work again at their old wages. The proprietor claims he is paying two cents more than is being paid at some shops, where thirteen cents is the rate.——Iron molders in New England earned, in 1860, about $11 a week. Their wages gradually increased during the war and the years that succeded, until, before the panic in 1873, they were paid $16 a week, the increase being 45 per cent. Now they receive $13 a week. In 1873 prices of commodities were much lower than they had been in 1865 and 1866, and a week's wages would for the first time purchase about the same quantities of common necessaries of life as in 1860, although there had been times when prices had been proportionately much higher than wages. Indeed, that has been true most of the time after prices began to advance. Now, a New England iron molder earns 18 per cent. more than in 1860, while a dollar is just as valuable as before the war.—*New York Tribune.*

Steel Barbed Wire for Fencing.—The rapid settlement during the last years of the large tracts of prairie land in the Western States, which are practically without timber, has created an increasing demand for a fencing material which, while it is cheap and easily transported, should offer full protection against stock, fire and winds. Timber, it was found, was cumbersome, required a large first outlay and frequent expense for repairs, and was destroyed by cattle, fire and high winds. Simple wire was found to do better, but yet it did not fully meet the requirements so perfectly as the barbed wire now generally used. A rapid increase in the demand has stimulated manufacturers to increase their output and improve their product by the use of good materials. Among the large firms who are devoting all their energies to this specialty are the Thorn Wire Hedge Co., of Chicago, Ill., who make steel barb wire under the patents of Michael Kelly. The wire is made with special machinery, and the material used is specially drawn Bessemer steel. A piece of steel is cut in diamond shape, a hole being punched in the center, through which one wire is strung, the second wire being twisted around, throwing the barbs at different angles, and holding them from turning by the second wire. This manner of barbing gives the strength where needed, at the base, and no loss of metal in fastening. The makers claim that this is a superior fence wire, and guarantee it as certain to resist any of the ordinary causes of accident to which farm fences are subject.

Philadelphia Exports to Brazil.—The Philadelphia *Evening Bulletin* says: "There is every opportunity for a large and profitable trade with Brazil," yesterday remarked Mr. Joseph Reed, who returned to Philadelphia on Saturday after a two months' visit to Brazil in the interests of trade. "The Brazilians," he continued, "will take any class of American goods in preference to the English productions with the exception of prints, which are imported from France. These prints are much superior in design to those made in this country, and I have brought back some samples with me, in the hope that our manufacturers may be able to excel in this branch also." Mr. Reed brought back with him a large batch of orders for Philadelphia houses, some of which will be shipped on the City of Para, sailing from New York on Saturday. Among the goods in demand are hardwares, oilcloths, carpetings, 2000 hoes, a similar number of bush hooks and 10 crates of glassware. Four crates of earthenware will also be shipped, and it is noteworthy that the samples of the latter goods had only arrived in the country a week when the order was given.

Special Notices.

PARTNER WANTED.

Wanted by an established Hardware house in one of the leading cities of Germany, a special or active partner willing to invest not less than $50,000. The house is largely engaged in the distribution of American goods, and to a gentleman well acquainted with the manufacturers of this country an excellent opportunity is presented for a safe and profitable investment. Address **Box 88,** Office of *The Iron Age*, 83 Reade St., N. Y

Wanted.

One Second-hand Mortiser.
" " " 1000-lb. Hammer.
" " " Reamer.

Transmit offers for part or all of above, stating price and manufacturer of machines, to

CAR SHOPS,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted,

low-priced, second-hand Lewis, Oliver & Phillips Bolt Header.

G. C. CHASE, Manchester, N. H.

SITUATION WANTED BY A MACHINIST and Engineer experienced in designing and constructing engines, boilers and machinery of various kinds. Address **ENGINEER,** Office of *The Iron Age*, 83 Reade St., N. Y.

Special Notices.

OCTOBER LIST, No. 1.

MACHINE TOOLS, Second-Hand.

Two Woodruff Steam Engines, automatic cut-off, cylinder, 20 inch diameter, 48 inch stroke.
One Portable Engine, 7 in. cylinder.
One No. 3 Stiles Geared Press.
One No. 2 Fowler Press.
One Sellers 500 lb. Steam Hammer.
One Hand Milling Machine.
One "Pond" Index Milling Machine.
Three Chase Patent Pipe Cutting Machines.
One Engine Lathe, 16 in. swing, 8 ft. bed.
One Back Geared and Self-Feed Drill, 32 in. swing.
One Pattern Makers' Lathe, 22 in. swing, 8 ft. bed, iron shears overhanging face plate and tripod rest.
Two Engine Lathes, 13 in. swing, 6 ft. bed. Two Engine Lathes, 22 in. swing, 8 ft. bed. One Engine Lathe, 76 in. swing, 36 ft. bed. One Engine Lathe, 15 in. swing, 6 ft. bed. One Engine Lathe, 15 in. swing, 7 ft. bed. Three Engine Lathes, 20 in. swing, 8 ft. bed. Six Turning Lathes, 14 in. swing, 4½ ft. bed. Three 4-spindle Drills. One 32x32x6 ft. Planer. One 48x48x12 ft. Planer. One 8 in. Shaper. One Gear Cutter. One new "Hardaway" Bolt Heading Machine, to head up to ⅝ in. bolts. One new "Hardaway" Bolt Heading Machine to head up to 1¼ in. bolts. A lot of Saw Tables and Wood Working Machinery.

Please specify which of the above tools you want and we will forward all particulars.

The above tools will be sold very low, and can be seen at

The George Place Machinery Agency,
121 Chambers and 103 Reade Sts., N. Y.

For Sale or to Rent!

RARE OPPORTUNITY!!

Richmond Architectural Iron Works, established for more than 20 years, embracing a centrally located lot of 130 feet front on Cary street, running back on the line of Eleventh Street 150 feet to an alley 20 feet wide. The improvements consist of a machine shop, built of brick and covered with slate, 60x150 feet, of 3 full stories, exclusive of cellar and attic. A brick foundry 40x90 feet, and brick offices and pattern shop, 30x60 feet.

In the foundry are two large cranes, No. 3 McKenzie Cupola and Sturtevant blower.

The machine shop embraces a complete outfit of valuable tools, as Machine Lathes, Drill Presses, Iron Planer, Bolt Cutter, Emery Machines, &c.

A collection of patterns of great variety, embracing almost every order of architecture. In fact every thing necessary to "start up" the works at once for a business of $200,000 per annum.

The property will be sold at a great sacrifice from the original cost.

Purchaser can divide the machinery, patterns &c., from the real estate if he does not care to buy the latter. Proffers for a lease of the whole property; or for the machinery, patterns, &c., with such portions of the real estate as may be needed for the conduct of the business will be entertained.

Apply in person or by letter to
Wm. L. Cowardin, Pres't,
No. 1015 Main St., Richmond, Va.

EXECUTORS' SALE OF Anthracite Blast Furnace.

The subscribers, executors of last will and testament of Peter Uhler, deceased, late of the Borough of Easton, Pa., will sell at Public Sale, at the Circle in said Borough, on 24th day of October, A. D. 1878, at 2 o'clock p. m.,

All that certain Anthracite Blast Furnace located in the Borough of Glendon, about 2 miles from Easton. The tract of land contains about 15 acres, and lies between the Lehigh Canal and Lehigh River, just below Chain Dam. The Furnace erected is a Sheet-Iron Casing Stack, 14½ feet bosh by 70 feet high, with closed top; I. P. Morris & Co. low pressure condensed Engine, 8 Boilers, 2 Kent's Hot Blast Ovens, Casting House, Engine House, Steam Hoist, &c., &c.; 11 Tenant Houses, 2 Stables and Blacksmith Shops. The furnace building is of brick and stone and put up in the best manner, all the modern improvements.

The Works were built in 1871 and are in the best of order and ready to blow in. Stock can be supplied by canal or railroad. Terms and conditions made known by

S. L. UHLER, EDWARD I. HUNT,
Executors of Peter Uhler, Deceased.

SECOND-HAND MACHINERY.

FOR SALE.—ONE DOUBLE-HEADED LATHE, specially built for turning off the ends of iron columns. Heads are double geared, one head shifting. Swings 3 ft.; shears measure 30 ft. long by 4 in. wide. In prime order, and is a first-class tool. Lately used in Jackson's Excelsior Iron Works. Price, $1000.

One single-head LATHE. Works with a round leather belt. Swings 4 ft.; total length, 30 ft. Out of the Allaire Works. In good order. Price, $650.

One ordinary geared Lathe. Swings 2 ft.; total length, 20 ft. In good order. Price, $250.

One No. 1 Sturtevant Blower for forges. New. Complete. Two (of the eight) arms accidentally broken, but does not affect its working. Price, $20.

Five iron SUSPENSION DRILLERS, with drill tables and all complete. Price, $20 each.

WM. J. FRYER, JR.,
Ætna Iron Works, 104 Gserck St., N. Y.

SECOND-HAND MACHINE TOOLS.

28 in.x60 in. Corliss Engine; 10 in.x24 in. Harris Corliss, with Vertical Boiler Heater and Pump, all new; 14 in.x30 in. Whitehill & Smith Adj. Cut-off Engine; 10 in.x24 in. Fishkill Landing Engine; one 45 h. p. Hor. Tub. Boiler. Engine Lathes as follows: 30 in.x12 ft., 24 in.x24 ft. Pond, nearly new, late pattern; four 16 in.x6 ft. Ames Mfg. Co., nearly new; one 13 in.x4 ft., Pratt & Whitney Taper Attach. Lincoln 48-in. Gear Cutter. One 13 in.x4 ft. P. & W. Lathe; one 20 in.x10 ft. Ferris & Miles, nearly new. One 27 in.x7 ft. Whitcomb Planer; one 38 in.x7 ft. Planer. One 30 in.x7 ft. Planer, new. One 16 in.x3 ft. P. & W. Planer. One Crank Planer. Two Profile Mch. One Mason Milling Mch. Four Brainard Millers, Seven Lincoln Pattern Millers. One each 2, 3 and 4 Spindle P. & W. Drills. One 8 in. Slotting Mch. One No. 6 Wilder Punch. One No. 2 and No. 4 Styles Press. One Schlenker Bolt Cutter, new. One Sellers Bolt Cutter.

E. P. BULLARD, 14 Dey St., New York.

To Steel Manufacturers.

An energetic young man with scientific training, who has had experience in the manufacture of Bessemer and Crucible Steel, in preference to remaining unemployed would be willing to take a subordinate position with the prospect of being employed as blower in Bessemer or as melter in Siemens-Martin steel works. Highest recommendation as to integrity, character and ability furnished. A correspondence, which shall be strictly confidential, respectfully solicited.

Address **A. I. F.,**
33 West 35th St., New York.

To Capitalists and Hardware Manufacturers.

The advertiser calls attention to a most valuable Patent, just issued, for radical improvements in Hand Screw-Cutting Tools (Stocks and Dies) and machinery (Bolt Cutting), saving 60 to 75 per cent. in outfit and labor on all the old systems. For sale whole or in part. Specification, drawings and specimens will be shown on application to

L. BOUVIER,
P. O. Box 98, New York City.

Special Notices.

JENNINGS' Combination Discount Tables.

(Published by the Author.)

Contains 1500 Tables.

Results found by Addition.

Worth more than it costs for either of the following purposes:

Proving work done in the ordinary way.

Finding **net costs** for **marking** goods.

Proving **accuracy** of bills received.

Making out invoices.

OPINIONS.

ST. JOHN, N. B., June 12, 1878.
We find them very useful, and a considerable saving in calculations.
T. McAVITY & SONS.

SHREVEPORT, LA., July 17, 1878.
We find it saves much labor in verifying invoices.
UTZ & SMITH.

The Book will be mailed, postpaid, to any address on receipt of the price, $3.

Currency may be sent by **mail** at my risk.

Address

S. H. JENNINGS,
Deep River, Conn.

Foreign Houses

importing American Goods, and desiring the services of a reliable Agent at a moderate commission to attend to all their business in the United States, are invited to correspond (in English) with the undersigned.

Has had three years' experience as purchasing agent for Messrs. Wm. Marples & Sons, Sheffield and London, England.

Address **S. H. JENNINGS,**
Deep River, Conn., U. S. A.

Second-Hand Machinery For Sale Low.

SEND FOR LIST.

Engine Lathe, built by Seth Wilmarth, 82 in. swing, 23 ft. bed, live spindle hollow, face plate both ends, one at front 6 ft. 4 in. diameter, one at rear 7 ft. 1¾ in. diameter, two boring bars traversed by tail spindle, both arranged for splining key ways; one of these bars is designed for work on rear face plate and has yoke to support outer end; on either face plate work may be bored, turned and splined without removing the fastenings. At rear face plate an adjustable bed 11 feet long, carrying an adjustable tool rest, the latter having 3 ft. 6 in. traverse, arranged to sit at any angle and in any position on above bed. Tail spindle is 5¼ in. square, carriage is fed by a screw the full length of bed, cross feed automatic, 6 grades of feed to operate either, 10 grades of speed for live spindle, driving movement gears direct to front face plate, complete with counter-shaft for driving, splining and feeding. One large saddle or center rest.

Planer, built by W. Collier & Co., Salford, Eng., planes 54 in. wide, 48 in. high, 18 ft. long, automatic cross, vertical and angular feed, platen driven by gearing into step rack, return motion about 3 to 1; has third upright with vertical tool slider, automatic feed, to plane work that will not pass between the regular uprights. This slider has a vertical movement of 3 ft. 4 in. Counter-shaft.

HOLYOKE MACHINE CO.,
Holyoke, Mass.

A Rare Chance.

FOR SALE—An established **Hardware Business** of 15 years' standing, in a Western city. Location unexcelled. Capital required, $6000; prefer the cash, but instead will take part in live stock (cattle or sheep). Best of reasons for selling. For further particulars address

HARDWARE, Box 44,
Office of *The Iron Age*, 83 Reade St., N. Y.

To Manufacturers, &c.

FLOWER PINS.

Something new, made of light wire, for the use of florists and others. Patent allowed and offered for sale, either before or after issue. For specimen card of pins or further information address the inventor, J. H. PLUMMER, 1276 Pacific St., Brooklyn, N. Y.

N. B.—Specimen cards not intended for parties who only wish to buy or deal in the pins.

WANTED—BY AN ENGLISHMAN (age 30) a situation as manager or assistant manager of engineering, iron or steel works. Has had good experience both in England and America. First-rate references. Is an Associate of the Institution of Civil Engineers. Address **J.,**
care of W. H. SMITHSON, Iron Merchant, &c.,
MIDDLESBROUGH-ON-TEES, ENGLAND.

BISSELL & WELLES, Auctioneers,

Special and Peremptory Sale of 400 kegs Flat and Round Head Rivets, assorted lengths and sizes, on Tuesday, Oct. 8th, at 10½ a. m., at our salesroom, No. 89 Chambers and 65 Reade Sts., New York. The goods to be sold at this sale are standard goods, in good order and good sizes, and assorted Flat and Round Head, Bevel, Cone, Countersunk and Steeple Head Shovel and Hame Rivets, Coach Screws, &c. The entire quantity will be sold without reserve and in quantities to suit the small and large trade.

PATENT RIGHTS FOR SALE.

Mannebach Mitre Planing Machine. Also, Mannebach Box Dressing Machine, patented June 25th, 1878, calculated to clean 5000 boxes per day. Machines can be seen at the inventor's. J. MANNEBACH,
151 Essex St., New York.

Special Notices.

W. GARNER, General Merchant,

Mouldsworth, near Chester, England,

Supplies nearly every class of Goods,

including all kinds of

Agricultural Machinery, Domestic Machines,

SEWING MACHINES

And Artificial Manures.

W. GARNER is open to represent any Foreign Manufacturers in England for the sale of their manufactures of whatever nature or kind. Having a wide and well established connection in the Provinces, could introduce some American, German and French products to mutual advantage.

W. GARNER is also open to buy any kind of Goods on commission, and ship them to any part of the world. Manufacturers or others desiring his assistance will please address (with full particulars in English) as above.

AUSTRALIA.

AMERICAN HARDWARE CO.,
No. 9 WILLIAM STREET, MELBOURNE,
AUSTRALIA,

Solicit correspondence with American manufacturers desirous of representation in the Australian Colonies. Consignments will have prompt attention. References furnished.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working.

See page 17 of *The Iron Age* of Oct. 25th, 1877.

Wanted—A Partner,

In a foundry and machine business, already well established. Locality splendid and healthy.

A practical man with means is wanted to join a practical man who is already well established.

Address ***CAR WHEEL FOUNDRY,***
P. O. Box 134, Selma, Alabama.

To Manufacturers and Jobbers of Hardware, Cutlery, &c.

Manufacturers and Jobbers, having surplus stocks or goods that from any cause are unsaleable upon which they wish to realize, or assignees who have stocks to dispose of, will find a cash purchaser by communicating with.

W. M. CALDWELL,
Dealer in
Job and Auction Lots of Hardware, Cutlery, &c.,
102 Chambers St., New York.

Price Books.

Large Size,	Full	Leather	$12.00
" "	Half	"	10.00
Pocket "	Full	"	5.00

Send for circular.

BUELL LAMBERSON,
No. 97 Chambers Street, - New York.

These books may also be had at publishers' prices of WM. BLAIR & CO., Chicago, and A. F. SHAPLEIGH & CO., St. Louis.

FOR SALE.

Job Lots Hardware.

Great inducements to the trade. Two hundred dozen Handled Chopping Axes at a low price.

A. W. WHEELER,
141 Lake St., Chicago, Ill.

SPECIAL NOTICE.

The undersigned offer their services as agents to **American Producers of Metals.**

They represent foreign brands of

Zinc, Russia Iron, Hoop Iron, Window Glass, Cutlery and Guns.

LOUIS WINDMULLER & ROELKER,
30 Reade Street, N. Y.

J. H. JENKS & CO., Manufacturing Machinists

180 Centre Street, New York,

are prepared, with a superior equipment of first-class tools and experienced mechanics, to contract for the *designing* and *construction* of special TOOLS, DIES, JIGS and GAUGES for duplicating interchangeable parts of fine machinery or sheet metal goods. Contracts for manufacturing staple goods in quantity solicited.

CALIFORNIAN AGENCY.

A San Francisco firm of File and Tool makers, having an agent constantly traveling among the consumers in the State and West Coast, is desirous of representing some first-class Eastern Houses in the manufacturing hardware trade.

Address **AGENCY, 248 Beale St.,**
San Francisco, Cal.

Wanted,

A ROLLING MILL FOREMAN.

He must be a good practical Heater, Roller and Roll Turner. None need apply without good references as to character. Address,

B. H. S. W.,
Office of *The Iron Age*, 83 Reade St., N. Y.

A GENTLEMAN

with 12 years' experience with the New England Hardware Trade desires a position with some manufacturing company as traveling salesman. Trade already established. Address

HARDWARE,
P. O. Box 1051, Boston.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Oct. 9, 1878.

The failure of the Bank of Scotland has been the chief topic of interest in financial circles during the past week. The only effect of the failure in this market was to increase the demand for short-sight drafts on London and advance the gold premium to 100¾. Early in the week money advanced to 7 %, fell to 3 % and recovered to 3 @ 4 % for call loans. The rate on prime business paper is 5 @ 6 %.

In the gold market the range of fluctuations has been between 100⅜ and 100¾. The average is about 100⅝.

The bond market has been firm for United States bonds and quotations have advanced. The prices bid and asked at the close of business to-day are given below. State bonds are dull and firm; railroad mortgages strong and higher.

The stock market was generally weak, although in some shares there was an advance. The principal dealings were in the stocks usually most active.

The bank return for this week shows a decrease of $2,361,250 in surplus reserve, which now stands at $7,436,050, against $8,490,350 at this time last year, and $16,540,425 at the corresponding period in 1876. The loans show an increase this week of $1,559,400; the specie is decreased $599,900; the legal tenders are decreased $2,318,500; the deposits are down $2,228,600, and the circulation is decreased $40,300.

The following is an analysis of the bank totals of this week compared with that of last week:

	Sept. 28.	Oct. 5.	Comparisons.
Loans	$246,322,500	$247,881,900	Inc. $1,559,400
Specie	18,199,600	17,599,700	Dec. 599,900
Legal t'nd'rs	45,680,700	43,362,200	Dec. 2,318,500
Tot. reserve.	63,880,300	60,961,900	Dec. 2,918,400
Deposits	216,332,000	211,103,400	Dec. 2,228,600
Reserve required	54,083,000	53,525,850	Dec. 557,150
Surplus	9,797,300	7,436,050	Dec. 2,361,250
Circulation.	19,617,800	19,577,500	Dec. 40,300

The foreign trade movements for the week are shown in the following tables:

IMPORTS.

For week ended Oct. 5:

	1876.	1877.	1878.
Total for week.	$5,030,112	$5,729,769	$7,194,502
Prev. reported.	220,870,289	249,400,542	214,713,878
Since Jan. 1	$225,900,401	$255,130,311	$221,908,380

Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Anvils	301	$2,441
Brass goods	28	4,397
Bismuth	1	337
Bronzes	24	6,599
Chains and anchors	9	262
Cutlery	53	18,080
Guns	56	12,725
Gas fixtures	1	19
Hardware	8	532
Iron, pig, tons	100	1,428
Iron, sheet, tons	28	2,312
Iron, other, tons	998	45,850
Lead, pigs	300	1,613
Metal goods	103	14,552
Needles	22	8,941
Old metal		156
Platina	1	6,320
Plated ware	2	27
Per. caps	22	3,092
Saddlery	5	921
Steel	526	8,793
Spelter	44,136	1,896
Silverware	6	204
Tin, bxs	26,350	105,468
Tin, bbls	25	752
Tin, 3308 slabs	449,930	63,999
Wire	15	1,456
Zinc	11,082	550

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended Oct. 8;

	1876.	1877.	1878.
For the week	$6,003,215	$6,373,639	$7,183,567
Prev. reported	197,745,298	209,548,035	261,444,405
Since Jan. 1	$203,748,513	$215,921,674	$268,627,972

EXPORTS OF SPECIE.

For week ended Oct. 5:

Total for the week	$59,974
Previously reported	10,566,210
Total since Jan. 1, 1878	$10,626,184
Same time in 1877	23,053,210
Same time in 1876	40,687,692
Same time in 1875	65,697,574
Same time in 1874	42,831,267
Same time in 1873	42,539,044
Same time in 1872	60,076,209

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6's	119¾	119¾
U. S. 6's 1881 registered	107¼	107⅞
U. S. 6's 1881 coupon	107¾	107⅞
U. S. 6's 1865 new reg	103	103⅛
U. S. 6's 1865 cou	103	103⅛
U. S. 6's 1867 reg	105¾	105¼
U. S. 6's 1867 cou	105¾	105⅛
U. S. 6's 1868 reg	107	107⅛
U. S. 6's 1868 cou	107¼	107½
U. S. 10-40 reg	106	106⅛
U. S. 10-40 coupon	106	106⅛
U. S. 5's 1881 registered	105¼	105⅞
U. S. 5's 1881 coupon	105¾	105⅞
U. S. 4½'s 1891 registered	103¾	103⅝
U. S. 4½'s 1891 coupon	103⅝	103¾
U. S. 4's 1907 registered	100	100⅛
U. S. 4's 1907 coupon	99⅞	100⅛

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	27½	28
Chicago and Northwest	39⅜	39¾
" " Pref	70⅝	70¾
Chicago, Rock Island and Pacific	114¾	115
Chicago, Bur. and Quincy	111	111½
Col., Chicago and Ind. Central	4¼	4½
Clev., Col., Cin. and Ind	31½	32
Cleveland and Pittsburgh	83½	84
Chicago and Alton	82½	83½
" " Pref	102	103
Canton	22	25
Delaware, Lack. and Western	52⅛	53
Delaware and Hudson Canal	49	49⅛
Express—Adams	107	108
" American	49	49½
" United States	48½	49¼
" Wells, Fargo & Co	95	97
Erie	12¾	13
Harlem	135	136
Hannibal and St. Joseph	14¾	15
" " Pref	37½	38½
Illinois Central	79	80
Kansas Pacific	9⅝	10
Kansas and Texas	4¼	4½
Lake Shore	69	69½
Michigan Central	70	70½
Morris and Essex	83¾	84
Milwaukee and St. Paul	31⅛	31¾
" " Pref	65¾	65⅜
New York Central	113	113¼
New Jersey Central	33⅛	33⅜
Ohio and Mississippi	7⅞	8
Pacific Mail	16¼	16⅜
Panama	120	121½
Pittsburgh and Fort Wayne	98	98½
Quicksilver	12¼	13½
" " Pref	33	34
St. Louis Kansas City Northern	5	5¼
" " " Pref	21½	..
Toledo, Wabash & Western	18⅜	19
Union Pacific	66½	66¼
Western Union Telegraph	93¼	95⅜

GENERAL HARDWARE.

The trade in general report an active demand, and the tone of the market is decidedly strong. Some lines of goods are at present quoted at such low figures by the makers that it is obvious they are sold without profit, and in some instances below cost; such conditions tend to speculative purchases, but we are informed by several makers of the classes of goods to which these remarks apply that orders beyond the reasonable requirements of the trade are firmly declined. The volume of business so far this fall is entirely satisfactory, notwithstanding the heavy drawback which the loss of a large portion of the Southern trade has occasioned. The only complaint we hear of is on the score of small profits or no profits at all.

In Foreign Hardware there is nothing new to report. The demand is seasonably fair, and stocks in importers' hands are light. The Wiebusch & Hilger Hardware Company have advanced the price of the Frary Cutlery Company's goods about 5 per cent. Their new list will be issued shortly. The Russell & Erwin Manufacturing Company invite the attention of the trade to their full line of Barney & Berry's Skates. They will issue shortly their revised price list for the season of 1878.

Henry Disston & Sons illustrate in their advertisement on page 29 some of their leading patterns of Patent Tooth Cross-Cut Saws. They are now making a one-man Cross-Cut Saw with Skew Back and "Great American" Tooth, which they commend to the notice of the trade for its lightness and the greater ease with which one man can operate it than is possible with one-man Saws of the old form. Their "Great American" Cross-Cut Saw is fully warranted, and they say of it that the blades are flattened by the most improved process known, and they are tapered several gauges thinner on the back than on the tooth, thereby allowing them to run free and with less set than is possible to be used with the low-priced Saws with which the market is flooded. They are anxious that their customers should give the "Great American" Cross-Cut a fair trial, placing it in the hands of practical men, when if not found entirely satisfactory they may be returned at their expense. The "Lumberman" Cross-Cut is also fully warranted. These Saws are shown with their Patent Handles, which have had a very large sale.

The demand for Nails is not active, and the general accounts regarding the local trade show a considerable tapering off in the volume of business as compared with the previous month. We hear of a sale of 5000 kegs for Eastern delivery at a shade below our quotations. We quote 10d. to 60d. $2.15 net.

We have received the following circular:

104 DUANE STREET, NEW YORK.

DEAR SIR: We, the undersigned, late with the firm of G. B. Walbridge & Co., have formed a copartnership under the firm name of Peabody & Bush, to transact a general hardware and commission business.

Hoping for your future favors, we are yours truly, ROYAL C. PEABODY,
Oct. 7th, 1878. HEWLETT BUSH.

A. A. Weeks, 82 John street, invites attention in his advertisement on page 6 to Weeks' Grape and Fruit Picker, manufactured under Valentine's patent. This instrument is a pair of shears arranged with an elastic hold-fast that cuts the stem and holds it so that the fruit can be deposited in the receptacle for receiving it without touching it with the hands. It will take the smallest cherry, or hold a bunch of grapes weighing five pounds. The smaller size is particularly adapted to flowers. Two sizes are made—No. 1 at $6.00, and No. 2 at $4.50 per dozen, net.

IRON.

American Pig.—The condition of the market is unchanged since our last report. No sales worth mentioning have been made during the week and the business done has been in small lots, the aggregate of which would sum up about 1000 tons. There is no change to note in prices, and we continue to quote: Foundry No. 1, $16.50 @ $17; Foundry No. 2, $15.50 @ $16.50; Gray Forge, $14.50 @ $15.50.

Scotch Pig.—The sales of Scotch Iron reported during the week are 50 tons of Coltness here and 100 tons Glengarnock to arrive, both on private terms. We quote: Glengarnock, $22.75; Eglinton, $21.75, and Coltness, $23.

Rails.—No sales are reported for this market, although there are inquiries for Steel which it is expected will result in business. We hear of the sale of 10,000 tons Steel Rails in the West on private terms. In Iron Rails nothing has transpired so far as this market is concerned. We quote: Steel at mill, $42 @ $44; and Iron, according to quality, terms, &c., $32 @ $36.

Old Rails.—The only transaction in Old Rails which has come to our notice during the week is a sale of 600 tons on private terms. We quote, $17 @ $18 here.

Scrap.—We hear of a sale of 150 tons No. 1 Wrought Scrap on private terms, and quote the same from yard, $20 @ $21, which is the nominal price.

The following circular explains itself:

Office of THE CATASAUQUA MANUFACTURING CO.,
Manufacturers of
High Grades Bar and Plate Iron.
CATASAUQUA, Pa., Sept. 18, 1878.

Mr. Theodore Sturges having resigned the agency of this company in New York city to engage in other business, Mr. E. T. Day has been appointed to fill the position, and we solicit for him your valued orders. All settlements will be made direct with this office, and statements of account will be forwarded monthly. Respectfully yours,
CATASAUQUA MFG. CO.
OLIVER WILLIAMS, General Manager.

DEAR SIR: Referring to the above, I would inform you that, from this date, my office will be at No. 95 Liberty street (Room 4.) Respectfully yours, E. T. DAY.
NEW YORK, Oct. 7, 1878.

METALS.

Copper.—The large sale alluded to in our last report has been confirmed, the quantity changing hands having been 8,000,000 lbs. at 15⅛¢. Since then nothing further has transpired, the market closing firm at 16¢ @ 16⅛¢. Baltimore we quote 16¢, nominally. No further telegraphic news has reached us about the metal from London, and the presumption is that no further change has taken place. We copy the following passage from the London *Mining Journal* of Sept. 28: "There has been a steady market throughout the week, and prices have slightly stiffened, both for raw and manufactured. The smelters have positively refused to accept further orders at former rates, and as they have now secured a fair number of orders and state that they are well supplied with work during the next four or five weeks, they are indisposed to sell unless slightly higher rates are obtainable; at any rate they feel that there is no necessity for them to change their views just now, for should the Indian Exchange continue to improve the demand for manufactured will undoubtedly increase, and merchants will not object to pay a little higher price. The low prices which have been ruling here have not hitherto benefited the Indian buyers, for they have lost all the advantage by the low rates of exchange, but if the exchange were to advance and a war take place they would have such an effect that the demand would be immensely benefited, for shippers would be extremely eager to secure Copper and Yellow Metal at these exceptionally low prices. As it is, shipping orders have been pretty freely given out, and it is not unlikely that actual stocks at the end of the month may show a further diminution, and should this be followed with moderate charters the position of the market will be thoroughly and firmly established." After a while we shall see what effect the great English failures will have on manufactured Copper in India. The demand for manufactured Copper is not very brisk, the combination prices being nominally unchanged. There is not much demand for Yellow Sheathing Metal, and the market for both English and American is dull. We quote: New Sheathing Copper, 26¢; Braziers, 28¢, and Bolts, 28¢; American Yellow Sheathing Metal, 13½¢; Yellow Metal Bolts, 25¢, and English Yellow Sheathing Metal, 12¾¢ @ 13¢, currency, in bond.

Tin.—Our market is quiet and a little unsettled, owing to lower prices abroad. The colossal failures in England and Scotland have, as was to be presumed, affected the price of Straits Tin on the other side, and it has declined to the low figure of £54, as the cable informs us, while Singapore has declined to $17.50 per picul. Fortunately for holders here, the statistical position of Tin on this side is excellent. The shipments from the Straits in September were 250 tons to England and only 50 tons to the United States. There is nothing due from the Straits here in all the present month, and during the next two months there are to arrive only 5000 slabs. We quote to-day Straits, 13⅜¢; English Refined, none here; do. Common, 13⅜¢, and Banca 16½¢, all large lines. Stocks at New York are reduced to a mere trifle. *Tin Plates.*—Coke Tin Plates are quite firm, and the stock has dwindled down very much. Charcoal Tin Plates are steady at our quotations; all Ternes are dull. We quote, per box, large lots, as follows: Charcoal Bright, $5.75 @ $6; ditto Ternes, $5.35 @ $5.50; Coke Tin, $4.75 @ $5; and ditto Ternes, $4.62½ @ $4.75. Mail advices are to hand, dated September 28, and fully confirm the telegrams we alluded to in our last weekly review. A large proportion of makers agreed to stop turning out Tin Plates for twelve months every Saturday and Monday of the week. They will carry out this plan whether the remaining makers accede to the proposed curtailment or not. The reduction as it stands amounts to something like 15,000 boxes per week. Since what precedes occurred, Coke Tins, the cable informs us, have advanced 1/ @ 1/6 per box in England, and the article now seems in a position susceptible of further improvement on both sides of the ocean.

Lead.—This metal continues in a highly unsatisfactory condition, the consumptive demand failing to manifest itself. No sales were made, and we nominally quote Common Domestic 3½¢ @ 3.60¢. Visible supply, 10,000 tons. There is a fair trade reported in Manufactured at manufacturers' prices, which are slightly lower for Bar, Pipe and Sheet. We quote: Bar, 4¾¢; Pipe, 4¾¢; Sheet, 5½¢; Tin-Lined Pipe, 12¢; No. 1 Solder, 8½¢; all less 10 % to the trade. The London *Mining Journal* of Sept. 28 contains the following: "A little more demand has set in at the reduced prices, but the market still seems in an undecided condition. At the same time, prices are so exceedingly low that buyers need not be apprehensive now of prices running down. Any further reduction will probably be slight and gradual. The market cannot keep dropping without producing a very serious effect upon the mining interest and supplies will be checked."

Spelter and Zinc.—Spelter is quiet and steady, and we quote as follows: Common Domestic, 4¾¢ @ 5¢; Refined, 8¼¢ @ 8¾¢, and Silesian, 5¾¢. Stocks, both at New York and in the West, continue quite moderate. We take the following from the London *Mining Journal* of September 28: "Prices have not altered, and the demand seems to be satisfied for the moment. The clearances have done little toward lifting prices, but in one or two instances sellers have been fortunate enough to obtain a rise." *Sheet Zinc.*—The market is quiet and nominal. We quote: Domestic, 6⅛¢ @ 6½¢, and Mosselman, 7⅛¢ @ 7⅜¢.

Nickel.—Nothing of special interest has transpired under this head. The market is moderately active at $1.05 @ $1.30.

Antimony.—The inquiry is not very active, but scarcity keeps up prices at 12¢ @ 12½¢.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending Oct. 9, 1878:

	Quan.	Value.
Hamburg.		
Hdw., cs.	492	$4,484
Belting, cs.	6	1,187
Mach'y., cs.	48	4,684
Pl'd ware, cs.	2	158
Car wheels	50	212
Ag. imp, pkgs.	13	1,796
Copper, cks.	90	18,000
Mf. iron, pkgs	55	1,346
Spelter, slabs.	6191	18,080
Pumps, pkge.	1	53
Antwerp.		
Rifles, cs.	1	240
Hdw., cs.	14	450
Ag. imp., pkgs	5	400
British Guiana.		
Hdw., cs.	8	76
Danish West Indies.		
Hdw., cs.	5	92
Stettin.		
Mach'y, cs.	56	1,160
Bremen.		
Ag. imp., pkgs	85	1,325
Pl'd ware, cs.	5	431
Pumps, pkge.	1	72
Hdw., cs.	8	324
Copper, cks.	18	3,450
Hull.		
Hdw., cs.	49	2,107
London.		
Hdw., cs.	45	943
Spelter, slabs.	16	40
Ag. imp., pkgs	2	211
Pumps, pkge.	1	33
Belting, bale.	1	225
Mach'y, pkgs.	166	4,551
Guns, cs.	1	75
Liverpool.		
Wringers, cs.	6	160
Metal g'ds, cs.	3	882
Pumps, pkgs.	3	73
Mf. iron, pkgs.	33	1,768
Mach'y, cs.	48	7,807
Hardware	110	5,101
Ag. imp., pkgs	41	1,500
Glasgow.		
Belting, bale.	1	590
Mach'y., cs.	4	675
Gas fixt'rs, cs.	2	350
Guns, cs.	1	20
Havre.		
Copper, cks.	167	35,505
Hdw., cs.	3	220
Ag. imp., pkgs	23	1,265
Mach'y, cs.	8	805
Spelter, slabs.	16	40
British North American Colonies.		
Iron safes	5	675
Hdw., cs.	8	58
Mf. iron, pkgs.	45	241
Ag. imp., pkgs	6	48
British West Indies.		
Tanks	3	153
Nails, kegs	30	98
Hdw., cs.	4	57
Mach'y, case.	1	250
Chili.		
Pl'd ware, cs.	5	193
Car wheels	60	792
Steel, bdls.	4	50
Coal, tons	125	556
Hdw., cs.	10	530
Mf. iron, pkgs	9	105
Air guns, case	1	50
Mach'y, pkgs.	36	1,784
Nails, kegs	575	1,363
C'ge m'tl., pgs	64	2,085
Ag. imp., pkgs	25	1,100
	Quan.	Value.
Belting, bale	1	$80
Powder, kegs.	1500	3,000
Venezuela.		
Hdw., cs.	32	425
Mf. iron, pkgs	2	20
Nails, kegs	22	51
Hayti.		
Nails, kegs	20	50
Japan.		
Pumps	3	100
United States of Colombia.		
Arms, cs.	4	159
Mach'y, pkgs.	202	20,885
Cutlery, cs.	71	2,357
Tinware, cs.	8	103
Wire, pkgs.	25	254
Tacks, cs.	7	78
Cartridges, cs.	11	410
Boiler tubes	19	192
Guns, cs.	2	83
Pumps, pkgs.	2	161
Iron, pkgs.	102	553
Mf. iron, pkgs.	55	1,065
Hdw., cs.	100	2,648
Revolvers, cs.	9	2,347
Nails, kegs	49	196
Belting, case	1	122
Ag. imp., pkgs	11	292
Sabers, cs.	9	1,550
Brazil.		
Cutlery, pkgs.	78	2,570
Mf. iron, pkgs	112	1,973
Br'ss g'ds., cs.	1	189
Cartridges, cs	1	50
Guns, case	1	40
Gas fixt., pgs	3	192
Hdw., cs.	343	6,741
Mach'y, cs.	28	1,625
Gun cott'n, bx	1	150
Ag. imp., pkgs	94	1,292
Pumps, pkgs.	26	896
Pl't'd w're, cs.	5	619
Tinware, cs.	6	81
Car wheels	8	150
Carbines, cs.	1	105
Belting, cs.	7	1,398
Tacks, bxs.	20	173
Windmills, pgs	10	157
British Australia.		
Hdw., cs.	502	10,396
Mf. iron, pkgs.	24	440
Mach'y, cs.	8	258
Wringers,	8	220
C'ge mtls., pgs	287	3,188
Ag. imp., pkgs	31	721
Pl'd ware, cs.	8	83
Pumps, pkgs.	22	1,050
Marseilles.		
Hdw., cs.	2	139
Cuba.		
Mf. iron, pkgs.	381	2,353
Ma'y oil, gals.	240	192
Nails, kegs	300	789
Mach'y., pkgs	944	44,926
Belting, bales	3	655
R.R.m's., pgs	1644	29,384
Hdw., cs.	328	8,061
Tinware, cs.	3	175
Mexico.		
Carbines, cs.	52	16,711
Nails, kegs	66	128
Coal, tons	30	180
Ag. imp., pkgs	25	457
Iron safe	1	50
Mach'y, pkgs.	113	5,780
Iron, pkgs.	43	81
Pumps, pkgs.	7	91
Arms, cs.	2	191
Shot, bxs.	4	55
Cop. pans, pgs	4	156
Hdw., cs.	181	3,720
Cutlery, cs.	70	3,413
Pistols, case	1	85
Cartidges, cs.	61	1,522
Mf. iron, pkgs	291	848

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Oct. 8, 1878:

Hardware.

Boker Hermann & Co.
Cutlery, &c., pkgs, 28
Crowley R.
Cases, 1
Connelly T. J. & Bros.
Cases, 1
Curley J. & Bros.
Casks, 2
Degraw, Aymar & Co.
Chains, 2
Folsom H. & D.
Mdse., pkgs., 3
Freidmann & Lauterjung,
Mdse., pkgs., 2
Fuller Bros.
Chains, cks., 1
Livingston W. & F.
Millstones, cks., 24
Montgomery J. M.
Casks, 1
McCoy & Co.
Cases, 1
Mdse., pkgs., 3
Packages, 4
Moore's J. P. Sons,
Empty cartridge cs., cs., 10
Gun wads, cs., 17
Schuyler, Hartly & Graham,
Guns, cs., 3
Gun caps, cs., 8
Gun wads, cs., 14
Tillottson L. G. & Co.
Galv. wire, lots, 14
Wilson D. H. & Co.
Gun caps, cs., 5
Wallach A. & E.
Cases, 1
Wiebusch & Hilger
Hdw. Co.
Cutlery, hdw., anvils and vises, pkgs, 214
Order,
Files, cks., 11
Cases, 3
Guns, cs., 3

Iron.

Milliken & Smith,
Wire, bdls., 463
Naylor & Co.
Spiegel, tons, 74
Phelps, Dodge & Co.
Sheet, bdls., 114
Wolffe R. H. & Co.
Wire, pkgs., 774
Order,
Bundles, 260
Spiegel, tons, 171
Wire, coils, 4

Steel.

Carey & Moen,
Bundles, 157
Montgomery J. M.
Cases, 2
Prosser Thos. & Son,
Mdse., pkgs., 7
Richards Dan'l W.
Scrap, cs., 239
Stearns John,
Cases, 1
Woodford W. O.
Bundles, 170
Cases, 5
Wolffe R. H. & Co.
Packages, 67
Bars, 22
Order,
Cases, 12
Bundles, 72
Bars, 3
Forgings, 1
Rods, bdls., 162

Metals.

Alexandre F. & Sons,
Lead pipe, bdls., 85
Byrne Jos. & Co.
Tin plates, bxs., 738
Bruce & Cook,
Tin plates, bxs., 1525
Cort N. L. & Co.
Tin plates, bxs., 2446
Drexel, Morgan & Co.
Tin and terne plates, bxs., 2648
Tin, ingots, 332
Tin, bbls., 10
Franklyn C. G.
Tin plates, bxs., 1523
Grinnell, Minturn & Co.
Sheathing metal, cs., 20
Lamarche H.
Zinc, cks., 15
Naylor & Co.
Tin plates, bxs., 4939
Phelps, Dodge & Co.
Tin plates, bxs., 21,831
Black taggers, bxs., 225
Scheider Jos. & Co.
Tin plates, bxs., 95
Willett & Hamlin,
Sheathing metal, cs., 220
Wessels G.
Scrap metals, lbs., 3391; cop., lbs., 356
Order,
Tin and terne plates, bxs., 3522
Antimony, cks., 67
Tin plates, bxs., 8625
Tin, slabs, 590

COAL.

Not a little stir was caused yesterday among outsiders at the reports that there was trouble in the combination, and that it was possible that the action of the Lehigh Valley Company, together with the Lehigh men, would break up the combination. Some of the Coal dealers in the city made considerable use of the rumors in an attempt to "bear" the market, but without appreciable success. The state of the case is that the question of continuing the combination until April had come up. The Lehigh men naturally objected unless their percentage of the quota could be increased to the proper point. They were perfectly willing to adhere to the combination till the first of the year, but they had no idea of losing the first three months of next year by an unjust apportionment. This probably settles the fate of the present combination, which will now expire at the time decided upon when it was first formed. Nothing but disaster could come to the companies at the present time from a break. Prices are steady, and the demand for coal, although small for the time of year, has not fallen off during the week. Most dealers, in fact, consider it very satisfactory. Vessels are scarce, and we think that freights are slightly higher. To Boston, 95 cents and $1.00 are quoted.

Taken as a whole the Coal trade is in a tolerably satisfactory condition both for dealers and consumers. The large amount of domestic Coal laid in last winter, the small consumption, owing to the warm weather, and the large amount still in the cellars, will probably reduce the production for the present year considerably below the average. Prices, to the large consumer, are not likely to undergo any change—at least this is the universal promise of those in authority in the companies, and there seems to be every reason to believe that they will adhere to it.

OLD METALS, PAPER STOCK, &c.

There has been an active demand this week for Old Copper, Brass and Composition. Iron is entirely neglected and without animation. Lead is also in good request and scarce in the market. In the Rag and Paper Stock line, Seconds and White Rags No. 2 are moving freely and prices are firm at quoted rates:

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.13	@	....
Copper Bottoms	"	.10½	@	....
Yellow Metal	"	.10	@	....
Brass, heavy	"	.09	@	....
Brass, light	"	.07	@	....
Composition, heavy	"	.11½	@	....
Lead, solid	"	.02½	@	....
Tea Lead	"	.02	@	....
Zinc	"	.02¾	@	....
Pewter, No. 1	"	.09	@	....
Pewter, No. 2	"	.07	@	....
Wrought Iron	pr ton.	$16.00	@	....
Light do.	"	8.00	@	....
Stove Plate	"	8.00	@	....
Machinery do.	"	11.00	@	....
Grate Bars	"	3.50	@	....

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb.	3 c.	@	3½c.
" Cotton, No. 1	"	3½c.	@	....
" " No. 2	"	1½c.	@	....
White, No. 1	"	3½c.	@	3¾c.
" No. 2	"	2 c.	@	....
Seconds	per lb.	1½c.	@	....
Mixed, Woolen	"	2 c.	@	3 c.
Do. do.	"	6½c.	@	7 c.
Gunny bagging	"	3 c.	@	....
Jute butts	"	2¾c.	@	....
Kentucky bagging	"	3 c.	@	....
Book Stock	"	2½c.	@	....
Newspaper Stock	"	1 c.	@	1¼c.
Waste Paper and Scraps	"	½c.	@	....
Kentucky Bale Rope	"	4 c.	@	....
Oakum Junk, No. 1	"	4½c.	@	5 c.
" No. 2	"	3 c.	@	....
Tarred Shaking	"	1 c.	@	1¼c.
Grass Rope	"	....	@	2¼c.

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St.
PHILADELPHIA, Oct. 8, 1878.

Pig Iron.—The market has been somewhat active during the past week, but without any notable change in prices. The demand has been of a more general character, and a considerable amount of business has been done in small lots, but there is no disposition to purchase beyond what is necessary to supply immediate requirements. It is likely that prices have averaged something less than in previous weeks, as buyers of small lots are no longer willing to pay former asking rates, and for ordinary brands of No. 1 Foundry Iron $17.50 may be considered a fair quotation. Buyers of large lots look for more important concessions, and from 50¢ to $1 per ton reduction would have to be made in order to place 500 or 1000 ton lots. Stocks of good Foundry Iron are not large, however, but as strong efforts are being made to secure a market for the winter's product, anything like improvement in prices at present is quite out of the question. In Mill Irons (as well as Bessemer) some of the companies have already sold very largely for forward delivery, consequently prices for these descriptions are steady and $14 at furnace would be about an inside figure for Forge Irons. The leading feature in the market is a lack of confidence. It is admitted that prices are below cost of production, and that the present condition of affairs cannot be long continued; but producer, speculator and consumer alike, appear determined to avoid carrying stock, hence we have a dull, feverish and unsettled market, with nothing in sight likely to change its present character. The reports of improvement in the West are regarded as encouraging features, and in spite of the unsatisfactory situation, there is an expectation that an improvement here is only a question of a few weeks or months at furthest. We quote as follows: Select No. 1 Foundry Iron, $18 @ $19, ordinary Lehigh brands; No. 1 Foundry, $17.50 @ $18; No. 2 Foundry, $16 @ $16.50; Gray Forge, $15 @ $16; White and Mottled, $14.

Blooms.—The market is quiet and prices weak and irregular. Nominal quotations are as follows, but no business of importance can be done within $1 to $3 per ton of these figures, say: Sunken Scrap Blooms (2464 lb), $38 @ $39; Northern Ore Blooms (2240lb), $33 @ $37; best quality Charcoal Billets (2240 lb), for wire and steel purposes, $58 @ $60; Bars do., $62.50 @ $65; Sheet Iron Blooms, cornered (2464 lb), $53 @ $55; Cold-blast Charcoal Plate

Blooms, $50 @ $53; run-out Anthracite, $45 @ $47.50.

Muck Bar.—There has been some inquiry and a few small sales are reported at about $32. Buyers of large lots would not pay over $30 unless for very superior quality. We quote $30 to $33 as fair average of the market.

Structural Iron.—There is nothing new in the market; a fair demand for small lots is reported, and there is also some activity in completing old contracts, but outside of this the market is rather quiet. Prices are unchanged, as follows: Angles, 2.2¢ @ 2.4¢; Tees, 2.4¢ @ 2.5¢; Beams and Channels, 2.7¢ @ 2.8¢.

Plate and Tank Iron.—The demand for Plates continues brisk, and the upward tendency of the market is further confirmed. Orders for prompt delivery can only be placed by paying full market prices, and in some instances we know of an advance of about two dollars per ton being paid to duplicate orders given out during the early part of last month. Prices are not so firm, however, for winter deliveries, and there are some in the trade who consider the present firmness to be only temporary. In any case, there is a considerable amount of activity for the time being, and if other departments improve, there is no reason why this should again relapse into dullness. Competition is very close, however, and desirable orders are looked after with a good deal of anxiety. Prices to-day are firm, as follows: Common Plates, 2.2¢ @ 2.3¢; Tank Iron, 2.3¢ @ 2.5¢; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.7¢ @ 4¢; Solid Firebox, 4.85¢ @ 5¢, and Best Bloom, 5.5¢ @ 6¢.

Sheet Iron.—With the exception of thin Sheets we have to report a very active demand, and transactions are unusually numerous and heavy. The prospects seem to be that the large stocks carried by manufacturers from last year will this season be marketed. Prices are irregular, however, the anxiety to unload tending to prevent anything like an advance. The following quotations are for small lots; large quantities may be bought at $2 to $3 per ton less. We quote: Common Sheet, No. 20 to 23, 2.8¢ @ 2.9¢; No. 24 to 26, 2.9¢ @ 3¢; No. 27 to 28, 3.1¢ @ 3.15¢; Best Refined Sheet Iron, No. 16 to 21, 2.9¢ @ 3.0¢; No. 22 to 24, 3¢ @ 3.1¢; No. 25 to 28, 3.2¢ @ 3.3¢; Best Bloom Sheets, No. 16 to 21, 4.7¢ @ 4.8¢; No. 22 to 24, 5¢; No. 25 to 28, 5¢ @ 5.2¢; Common Red Plates, 5-16 to 18, 2.4¢ @ 2.5¢; Refined Plates or Blue Annealed, 5-16 to 18, 2.4¢ @ 2.6¢; American, R. G., 5-16 to 18, 2.9¢ @ 3.1¢; Best Bloom, 5-16 to 5-18, 4.9¢ @ 5¢; Philadelphia Russia, 6.5¢; A. Patent Planished, 10¼¢; B. Patent Planished, 9½¢; Bloom Galvanized, 40 %; Refined Galvanized, 50 %, with extra discounts for large lots.

Bar Iron.—There is a better feeling in the Bar trade and manufacturers demand a slight advance on prices recently ruling The demand from store shows more activity, and all classes of trade appear to be taking something. One firm largely engaged in the trade informs us that their sales last week were heavier than during any whole month in the present year, while all agree that the demand is quite satisfactory. The continued suspension of work at the city mills may perhaps have some influence on the market, but the leading cause is probably owing to the fact of higher freights and higher prices at Western mills. Prices for small lots are as before 1.9¢ to 2.0¢ for Refined Iron, but for large lots there is not the same margin as heretofore, and 1.8¢ is probably the lowest figure which manufacturers would accept, while 1.85¢ to 1.9¢ is generally asked. We quote Ordinary to Best Refined 1.7¢ to 2.0¢, according to quantity and quality.

Steel Rails.—The firmness noted in previous reports is well maintained, and the mills are generally employed to their utmost capacity. There are numerous inquiries for large lots, and if sellers were willing to make concessions extensive contracts could be obtained immediately. Sellers prefer completing present engagements, however, rather than to enter into new ones, unless at such prices and deliveries as meet their approval. The demand is largely for Western delivery, although Eastern buyers are fairly represented. Sales have been chiefly of small lots at about $43 to $45 at mills, which is about an average quotation for immediate delivery. Winter deliveries are a little easier, and it is said that $43 at tide would be accepted by some of the Eastern mills. The market may be considered steady, however, although there is no doubt one or two sellers have been soliciting bids for winter work, and naming $43 at tide as a figure which would receive consideration. We cannot learn, however, that any transactions have been made so far at less than $43 at mills, which figure up to $45, according to section of rail, time of delivery and location of mill, may be considered a fair quotation.

Iron Rails.—The market remains in a strong and healthy condition, with prospects of a decidedly encouraging character. The mills are all pretty well employed, while from the numerous inquiries which are made from *bona fide* buyers still greater activity is anticipated. Prices are very firm; buyers who cannot offer satisfactory securities do not meet with much attention. The majority of recent transactions have been exceptionally favorable in this respect, cash or its equivalent having been the rule to a larger extent than formerly. Ordinary Rails may be bought at something below our inside quotation, but standard qualities are very firm, and $32 @ $34.50, according to section, are about bottom prices. Light Rails are in active demand, for which, of course, prices are in proportion.

Old Rails.—The demand from the West continues to be as urgent as noted in our last, and prices in consequence have been further advanced, and, in fact, the market completely cleared. A number of sales are reported at prices all the way from $21 to $22.50, Pittsburgh delivery. One or two lots have been sold on the spot at $19.50 @ $20, with further demand at same figures, but none offered. We note sales also of extra qualities at considerably higher figures, one parcel realizing a full dollar and a half per ton beyond the average quotation. It is supposed that the demand is only temporary, and that a reaction may set in at any moment. We quote $19.50 @ $20 for average lots, with higher prices for extra qualities.

Spikes.—5⅝ x 9-16, 2¢; ½ x 4 and longer, 2.2¢; 7-16 x 4 and longer, 2.3¢: ⅜ x 3½ and longer, 2.5¢; ⅜ x 3 and longer, 2.6¢.

Old Car-Wheels—Are in demand, with sales of 50-ton lots at $18 at point West. Old Car-Axles in demand also, but none offered.

Scrap Iron—Is fairly active at former prices, viz.: Wrought, $20 @ 22.50; Cast, $14 @ $15.

Nails.—The market is very dull and sales difficult to make except in small lots. We quote $2.15 as an average price.

Shot.—The demand continues brisk at former prices. We quote: American Chilled, 8¢ @ 9¢; Drop, 6½¢ @ 7½¢; Buck, 7½¢ @ 8½¢; all less 10 % to the trade.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., Oct. 8, 1878.

The business outlook remains much the same as noted in our report of last week. The excitement attending the political campaign is not without its effect in curtailing business not only here but elsewhere, and there is no question but the greenback movement has had much to do with keeping back the "good time" coming. If the inflationists are killed off at the coming State elections, as seems probable, there is every reason to believe that general trade will soon improve. Our manufacturers, as a general thing, did more business in September than August, and we are in hopes that October will show an improvement over September. We heard one of our business men remark the other day that he had done more business in September than during any preceding month for five years, or prior to the panic, but that he had during the month in question made but little money. This, we apprehend, is the case with merchants and manufacturers not only here but elsewhere; they are having an increased business, but the margin for profit is very small as compared with the war times, and there is a good deal of complaining in consequence. People had become so used to making money rapidly and easily that they are not willing to come down to a legitimate business, and it is this spirit of discontent and unwillingness to be satisfied with a small margin for profit that is aiding and abetting the inflation movement. As a rule, however, our solid business men are nearly all against inflation, and will oppose it with all their might; they realize the situation that what is wanted now is not to disturb the financial policy of the government, but to let it alone and all will come right.

Pig Iron.—Business continues quiet for the season, but the trade generally are hopeful, especially as regards standard Mill Irons, which, being in light supply, with but little being made, are held with considerable firmness, and a further advance soon is not improbable. Strictly No. 1 all-ore Red Short cannot be obtained under $19.50, 4 mos., and some of the furnaces are refusing to sell under $20, 4 mos., claiming that even at the latter price the margin on an all-ore Iron is very small. With the exception, however, of the grade in question, the market continues easy; there is no scarcity of Mottled and Neutral Irons, and they are to be had at easy prices. While the production of strictly Red Short all-ore Pig has been very meager for several years past, ever since the panic, owing to the fact that actual cost could not be obtained, the production of Cinder Iron was increased and there was considerable of an accumulation, and this accounts for the advance in the former, while the latter continues weak with a supply in excess of present wants. The inquiry recently has been chiefly for Red Short, which is wanted for mixture, but the firmness with which it is held curtails business, buyers refusing to pay the advance except for small lots. Bituminous Coal Smelted may be fairly quoted as follows: Foundry, $18 @ $20, 4 mos; Gray Forge, $16 @ $17 for Neutral, $17 @ $17.50 for Mottled Red Short, $18.50 @ $19, 4 mos., for No. 1 ditto and $19.50 for all-ore ditto. Coke Irons—$16, cash, @ $17, 4 mos., for Forge, and $18 @ $19 for Foundry. Anthracite—$18 @ $19 for Foundry and $16.50 @ $17 for Forge. Bessemer Pig is still quoted at $20, 4 mos., delivered free on cars in Pittsburgh. The Edgar Thomson Rail Mill Company have closed contracts for all the Bessemer they will want during the remainder of this year. Charcoal Irons continue dull, owing to the fact that they are being supplanted by cheaper Irons. Some buyers refuse to make but little difference between them and ordinary Coal Smelted.

Manufactured Iron.—The general situation remains much the same as noted in our report of last week. While some of the mills are quite busy, running to their full capacity, others are still working single turn. In the aggregate, however, there is a very fair and increasing business, and prices are firm—no "cutting;" and here in Pittsburgh no disposition. Indeed, some of our manufacturers are refusing to sell except in a small way to regular customers, at current rates, claiming that for the quality they make there is no margin for profit, and indicating also that they are expecting to realize better prices before long. In a word, the general position of the market continues favorable to the producing interest, as stocks are comparatively light. The production is down lower than it was, while the consumption is increasing. We continue to quote on a basis of $1.75, 60 days, for merchant bars, with the usual discount of two per cent. for cash. So far as your correspondent can learn, there is no one here selling below quoted rates, and some makers are clamorous for an advance.

Nails.—There is an increasing demand but no improvement in prices. Indeed, it is rumored that sales are being made lower than ever, hence the situation in this important particular instead of getting better is growing worse. While $2, 60 days, two per cent. off for cash, is the common rate, rumors prevail of offers to sell as low as $1.90. Owing to the unremunerative condition of the market, but few of the factories here are in operation, and our manufacturers generally are doing just as little as they can possibly help, as at $2 they can just about hold their own, while at $1.90 there is an actual loss; so it is said by those who are in a position to know.

Horse and Mule Shoes.—There is only a moderate inquiry. No change in prices.

Steel.—While the mills generally have about all they can do, some of our manufacturers report that orders are not coming forward as freely as they did a few weeks ago; also that prices are easier, but unchanged. We continue to quote Tool Steel at 11¢ @ 13¢ as to quality; Machinery Steel, 4½¢ @ 7¢; Spring Steel, 4¢ @ 6½¢; Tire Steel, 3½¢ @ 5½¢; Boiler Plates, 5½¢ @ 7¢.

Rails.—Steel Rails are still reported firm at $44, cash, at mill. Steel Rail Ends firm at $28, cash, at mill. Steel Billets and Blooms, $1 ₱ ton higher, and we now quote the former at $46 and the latter at $43, cash, deliverable at mill. Old Iron Rails still quoted firm, with an increasing demand and limited offerings. We now quote at $22 @ $23, gross, according to quality.

Wrought Iron Pipe.—There is an increasing inquiry, possibly, but business is light as compared with what it should be and usually is at this season of the year; indeed business has been comparatively light all this year, with but little prospect of any improvement until the spring trade opens. Discounts on Water and Gas Pipe, 60 @ 65 %; on Boiler Tubes, 40 %.

Scrap.—The movement in all kinds of Scrap continues light, with no recent change in prices. Old Car Wheels, $18 @ $19, gross; we are cognizant of a sale recently of a choice lot at $19, which is the top of the market. Car Springs, net, $31 @ $32; Car Axles, $26 @ $27. No. 1 Wrought Scrap, $20; Boiler Scrap, $14 @ $15; Wrought Turnings, $14 @ $15; Cast Turnings, gross, $10 @ $10.50; Machinery Metal, $13 @ $14.

Window Glass.—The market continues, to makers, in a very unsatisfactory condition, as not only is trade dull for the season, but prices are being cut so that there is little, if any, margin; and what is worse still, there is but little prospect of any improvement this side of next spring. Discounts by the car load are still quoted at 75 to 75 and 10, 60 days, with 2 % off for cash.

Coke.—While business is dull for the season, it is all that can be expected in view of so many Pig Iron furnaces being out of blast. Prices firmer, but unchanged: $2.12 to $2.15 ₱ ton, delivered free on cars in Pittsburgh.

Coal.—The Coal business continues in a very unsatisfactory condition, with but little prospect apparently of an early improvement. The Southern markets are all overstocked, and then the consumption, owing to yellow fever, has been unusually light all summer, and, moreover, in addition to the stagnation in business in the South, prices not only there but at Cincinnati, Louisville and other points upon which we are dependent for a market, are down so low as to afford no margin for profit. It is to be hoped that there will soon be a change for the better, but the outlook at present is by no means encouraging.

CHATTANOOGA.

Yellow Fever, Business and Manufactures.

Office of *The Iron Age*, Market and 8th Sts., Chattanooga, Oct. 5, 1878.

Instead of a market report we give some faint idea of the effect of yellow fever (even in a mild form and trifling volume) on business in a flourishing trade and manufacturing center of the South.

Yellow fever was declared prevalent here in one or two insignificant points about the 18th of September. Since September 1 to date there have been 35 deaths from yellow fever, 14 from other fevers and 27 from all other causes, making a total of 76 in 36 days. Not a large death rate you will say for a population of 12,000. There are now under treatment 45 cases of yellow fever, about 16 convalescents and half a dozen cases of other dangerous sickness. Not a high sick list, surely. But such is the terror the yellow plague has inspired that this light brush of its wing over this city has literally dried up our trade and manufactures and brought all business to a dead stand. Here and there a plucky dealer is open a few hours each day. The manager of the Vulcan Works was running a day or two ago, having in operation the puddle and rolling mills and half his nail machines. All the rest has over it the gloom and stillness of death. The furnace, the Roane Mills, one of the cotton mills, Scofield's bar mill, the great saw-mills of Loomis & Hart, exist in perpetual Sabbath stillness. Once in a while some manufacturer abroad orders a lot of Pig Iron, and after working enough to earn the freight some courageous dealer gets it shipped.

The busiest business in town is the commissary of the relief committee, and the dullest street to be seen anywhere is our late lively, bustling Market. Its rows of stores and warehouses stand grim and silent with closed fronts for whole blocks.

There is no despair, though much foolish panic. Those who have read that New York, Baltimore, Philadelphia, and even Boston have had bad runs of yellow fever are not fearful that our trifling attack will "ruin" or even permanently hurt the town, or seriously reduce our fall and winter trade. Our mills will run with all the more energy when they once start; our merchants have so much population to supply, and if they don't buy any now they must buy more after a while.

Meantime we have on our hands a large number of workpeople, who had nothing ahead and are thrown out by the epidemic, together with a herd of professional poor, whom we must feed at a cost of $250 to $300 per day.

J. E. M.

BOSTON.

Oct. 5.—*Pig.*—Several dealers report a better feeling, but this is not effected in the light sales, which have been at the old range. Scotch Pig is quoted here at $23 @ $25. Nails have been in light demand, jobbing now at $2.25 @ $2.30. For 100-keg lots $2.20 is the price. Sheet is selling at 3¢ @ 3¼¢ ₱ lb. Russia is quiet at 10¼¢ @ 11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13¼¢ @ 14¢ for Cast; 9¢ for Blister, and 8¢ for Machinery. In Plate Iron the only activity in this market is in Tank, which is selling steadily at 2¼¢. Boiler Plate is very dull, quoting 2½¢ for No. 1 Charcoal, 2¾¢ for No. 1 Shell, and 3¼¢ for Flange. Merchant Bar jobs at $1.70 @ $1.75. The Marathon, from Liverpool, brought 487 bdls. iron, American Screw Company, 238 bdls. and 3 cases steel, order. The Istrian, from Liverpool, brought 5436 bars iron, Kidder, Peabody & Co.; 18 coils wire rods, Newell & Co.; 989 bars iron, Brown Bros., 1438 bars iron, Fuller, Dana & Fitz. *Copper* has continued in rather moderate demand. For manufactures we quote: New Sheathing at 24¢ @ 26¢. The outside price rules in small transactions, but large buyers are purchasing at the inside figure. Bolts are quoted at 26¢ @ 28¢. Yellow Metal Sheathing continues very weak, quoting 12¾¢ @ 13¢ for English, and 13¢ @ 13½¢ for American; Yellow Metal Bolts, 18¢ @ 20¢. *Lead* continues dull and easy. The Chadwick Lead Works and trustees for the creditors of the Boston Lead Company have made reductions in prices, as below. We quote: Pig, 3½¢ @ 3⅝¢, currency; Sheet, 5½¢; Pipe, 4¾¢; Tin-Lined Pipe, 12¢; Bar Lead, 4¾¢; all of these excepting Pig are subject to the usual trade or 10 % discount. *Antimony* is firm and fairly active, and we quote 12¢ @ 12½¢. *Spelter* continues firm, with little disposition on the part of buyers to sell on the spot at less than 5¢ for 10-ton lots. *Tin* is steady and unchanged. The Istrian, from Liverpool, brought 6 cases and 30 boxes Tin, James Hill; 551 boxes Tin Plates, order. The Marathon, from Liverpool, brought 319 boxes Tin Plates, Farrar, Follett & Co. We quote: Straits, 13½¢ @ 13⅝¢; Banca, 16⅜¢ @ 16¾¢; Refined English, 14¢ @ 14½¢, gold. We quote Plate: Charcoal, I. C., $5.75 @ $6; Coke, $4.75 @ $5; and Charcoal Terne, $5.40 @ $5.50, gold.—*Commercial Bulletin.*

ST. LOUIS.

Specially reported by Messrs. Spooner & Collins, Iron Commission Merchants, 217 North Third street, under date of Oct. 3: Pig iron business remains about the same as last reported, though there seems to be a little better feeling as regards the near future. Prices remain firm at quotations. Old Rails continue in demand but at low prices.

	No. 1.	No. 2.	Mill.	White and M'l'd.
Missouri Stone Coal	$22.00	$21.00	$19.00	$17.00
Missouri Charcoal	20.00	19.00	18.00	16.00
Tenn. Charcoal	20.00	19.00	17.00	16.00
Tenn. Coke, very soft and strong	20.00	19.00	17.00	15.00
Hang. Rock Charcoal	24.00	23.00	21.00	20.00
Hanging Rock Cold-short	23.00	21.00	20.00	
	Extra		B	
Alice and Sarah Hang. Rock Coke	No. 1.	No. 1.	No. 1.	No. 2.
Moxahala Blackband Ores	22.00	21.00	20.00	18.00
	23.00	22.00	21.00	19.00

COLD-BLAST CHARCOAL—All Numbers.

Hanging Rock	4 mos.	$28.00 @ 33.00
Tennessee	4 mos.	25.00 @ 30.00
Kentucky	4 mos.	25.00 @ 30.00
Missouri	4 mos.	25.00 @ 30.00
Georgia	4 mos.	25.00 @ 30.00
Alabama	4 mos.	25.00 @ 30.00
Assorted Bar Iron		1.75 rates.
No. 1 Wrought Scrap	₱ cwt.	.70 @ ....
Heavy Cast Scrap	"	.60 @ ....
Light " "	"	.40 @ ....
Old Rails, ₱ ton	4 mos.	19.00 @ 20.00
Old Car Wheels, ₱ ton	4 mos.	17.00 @ 18.00

CINCINNATI.

Messrs. E. L. Harper & Co. under date of Oct. 5, write us as follows: The condition of the market is encouraging. The volume of business is large and appears to be gradually increasing. Buyers very rarely have any considerable stocks on hand, and present purchases are not made speculatively in anticipation of wants, but for actual requirements. The quantity in the hands of furnaces and furnace agents has been steadily diminishing for a long while. At all points tributary to the market sellers are much firmer, and offers which a short time since would have been accepted promptly if not eagerly sought after are now declined. When a small advance of say 50¢ per ton has been made it has not stopped sales as would have been the case until recently, and in some instances an actual advance of $1 has been realized. Old Rails, which for a long time have had a depressing influence on the Pig Iron interests, appear to be in light supply and are very firm, while the demand from all quarters is decidedly active. If the business interests of the country maintain even the present degree of activity it seems probable that the time of a moderate and reasonable improvement in the Iron trade is near at hand.

HOT-BLAST FOUNDRY.

Hanging Rock C. C., No 1	$21.00 @ 22.00
" C. C., No. 2	19.50 @ 20.50
Alice, No. 1 Extra, I. M.	21.00 @ ..
" No. 1 " N. O.	20.00 @ ....
" No. 1, N. O.	19.50 @ ....
Hanging Rock Coke and S. C., No. 1	17.00 @ 20.00
" " S. C., No. 2	15.00 @ 16.00
Virginia Coke, No. 1	19.00 @ 20.00
" No. 2	17.00 @ 17.50
Shawnee S. C., No. 1	18.00 @ 19.00
" S. C., No. 2	16.00 @ 17.00
Hocking Valley S. C., No. 1	18.00 @ 19.00
" S. C., No. 2	16.00 @ 17.00

FORGE IRONS.

Hanging Rock, No. 1 C. C.	19.00 @ 19.50
Hanging Rock, No 1 Coke	16.50 @ 17.00
Longdale, No. 1 Coke	17.00 @ ....
Ala. and Tenn. No. 1 C. C.	17.00 @ ....
Red-short, No. 1 Coke	18.50 @ 19.50
Cold-short, No. 1	15.50 @ 16.00
Old Rails, prime	cash, 18.00 @ 19.00

CAR WHEEL AND MALLEABLE.

Hanging Rock C. B.	30.00 @ 31.00
Cherokee C. B.	28.00 @ .....
Southern and Western Brands	28.00 @ 30.00

LOUISVILLE.

Messrs. Geo. H. Hull & Co., under date of Oct. 7, write us as follows: The demand is good for Foundry Iron; other grades are of slower sale. Prices remain firm. The usual time, 4 mos., is allowed on quotations below:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$21.00 @ 22.00
No. 2 " "	19.00 @ 20.00
No. 1 Southern, Charcoal	18.00 @ 18.50
No. 2 " "	16.50 @ 17.00
No. 1 Hanging Rock, Stonecoal and Coke	19.00 @ 20.00
No. 2 Hanging Rock, Stonecoal and Coke	18.00 @ 18.50
No. 1 Southern, Stonecoal and Coke	18.50 @ 19.00
No. 2 " "	17.00 @ 17.50
"American Scotch"	18.00 @ 19.00
Silver Gray	15.00 @ 17.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l.	16.00 @ 17.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	16.00 @ 16.50
No. 2 Stonecoal and Coke, Cold-short and Neutral	15.00 @ 15.50
No. 1 Missouri and Indiana Red-short	20.00 @ 21.00
White and Mottled, Cold-short and Neutral	14.50 @ 15.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	29.00 @ 30.00
Alabama and Georgia, Cold-blast	28.00 @ 29.00
Kentucky, Cold-blast	25.00 @ 28.00

W. B. Belknap & Co., Iron and Steel merchants, under date of Oct. 7, report as follows: We are daily filing (not filling) orders from within the infected districts of the South, as well as from points shut up in such rigid quarantine as to exclude freights from even our own healthy city, yet in spite of this large contraction of our field of operations our chief difficulty is to get iron enough to meet pressing demands. The rolling mills in the Ohio Valley and westward to St. Louis are behind their orders, and prices for Bar and Sheet are steadily advancing. A healthy sign is the increasing demand for railroad supplies. The Ohio Falls Car Company at this point, who have kept up a standing advertisement for hands wanted in their shops all summer, have just closed some additional contracts, one, we understand, for four hundred cars. Everything, except the greenback craze in politics, points to a season of exceptional activity and prosperity in the West. We may fairly note iron prices as having advanced within a brief period $2 to $4 per ton for Bar, and $10 to $12 for Sheet. Nails unchanged.

BALTIMORE.

Mr. W. N. Wyeth, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following prices, under date of Oct. 7: Trade ruled moderately fair for the past week. Values remain firm and unchanged at annexed figures.

Refined Bar Iron, 1 to 6 wide by ⅜ to 1 thick	₱ lb	1.85 @ 2	¢
Refined Bar Iron, 1 to 4½ wide by 1½ to 2 thick	"	1.85 @ 2	¢
Refined Bar Iron, ¼ to 2, Round and Square	"	1.85 @ 2	¢
Hoop iron, 1½ wide and upward	"	2¼ @ 2½	¢
Band Iron, from 1¼ to 4 in. wide	"	2¼ @ 2½	¢
Horse-shoe Iron	"	3 @ 3½	¢
Norway Nail Rods	"	4¾ @ 5¼	¢
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	"	13 @ 14	¢
Machinery Steel	"	8 @ 10	¢
ast Spring Steel	"	6 @ 6½	¢
Homogeneous Steel Plate	"	7 @ 7½	¢
Common Horse Nails	"	13 @ 16	¢
R. R. Spikes, 5½x9-16		2¼ @ 2½	¢
Perkins' Horse shoes, ₱ keg of 100 lbs.			$3.62½
" Mule shoes			4.62½

	10	9	8	7	6
Putnam Horse Nails, ₱ lb	18	19	20	21	23¢
Globe Horse Nails, ₱ lb	18	19	20	21	21¢

Less list discount to the trade.

Messrs. R. C. Hoffman & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Oct. 7: With increased demand for Iron prices are very firm at about following rates:

Baltimore Charcoal Pig	$26.00 @ 28.00
Virginia " "	26.00 @ 28.00
Anthracite No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	16.00 @ 17.00
" Mottled and White	13.00 @ 14.00
Charcoal, C. B. Blooms	50.00 @ 52.00
" " Billets	52.00 @ 55.00
Refined Blooms	43.00 @ 45.00

RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace Agent, writes as follows under date of Oct. 7: The number of small orders coming in for Pig Iron makes a fair aggregate business. Old Rails and Wrought Scrap continue in demand. Quotations unchanged.

American Scotch Pig Iron	$21.50 @ 22.50
Anthracite, No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	17.00 @ 18.00
" Mottled	14.50 @ 15.50
Coke, No. 1	19.00 @ 20.00
" No. 2	18.00 @ 19.00
" No. 3	16.50 @ 17.50
Va. Cold-blast Charcoal, Cold-short	20.00 @ 23.00
Va. " " Neutral	27.00 @ 28.00
Va. Warm-blast " Cold-short	18.00 @ 21.00
Va. " " Red-short	17.00 @ 18.00
Old Rails	16.50 @ 17.50
Wrought Scrap No. 1	16.00 @ 17.00
Cast " (machinery)	15.00 @ 16.00
Richmond Refined Bar Iron	2c. @ ....
Horse Shoes per keg	.... @ 4.00
Mule " "	.... @ 5.00
Old Dominion Nails, Standard Size, ₱ keg	2.25 @ ....

Freights to Philadelphia, $1.40 per ton of 2240 lb., by sail.

Freights to New York, $1.60 per ton of 2240 lbs by sail.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

Paris, Sept. 22, 1878.—*Metals.*—The unsatisfactory state of affairs in business in neighboring countries continues to exercise a quieting influence among us. Manufacturers in the metal line seem to have arrived at the conclusion pretty much all over France that it is conducive to their own interest to curtail production for the remainder of the year. *Copper.*—There is an improved tendency. Common Chili Bars have advanced 3.75 francs the 100 kilos., and Ingots and Slabs, 2.50. We now quote at Paris: First brands Chili Bars, 161.25; common do., 160; Ingots and Slabs, 167.50; Best Selected, 170, and Corocoro Ore, 167.50. Havre is steady and quotes first brands Chili Bars, 165; good current do., 162.50, and Lota and Urmeneta, 160. Paris conditions. At Marseilles Copper is also held with greater firmness, but the dealings are restricted. They quote Spanish in slabs, 152.50; Red Tokat, 160; small Refined Ingots, 172.50; Sheathing, 187.50; Bolts, 192.50, and Yellow Metal Sheathing, 185. *Tin.*—Considerable weakness is noticeable in this metal in the Paris market. There has been a decline in Australian of 2.50 francs the 100 kilos., and of 1.25 in Billiton, while English has risen 1.25. We quote: Banca, 170; Billiton, 161.25; Straits and Australian, 157.50, and English, 160. At Marseilles prices have dropped to an unprecedently low point, and a further decline seems improbable. They quote: Banca, 165; Straits, 157.50; Billiton, 155, and English, 170. *Lead* remains decidedly weak here. No change can, however, be quoted. All sorts are worth between 41 and 41.50 francs the 100 kilos. First Fusion Spanish commands 42 at Havre. At Marseilles Lead is feebly upheld and inactive. They

quote First Fusion Soft, 30, and Second Fusion Soft, 38.75 @ 39; Manufactured, 44. *Spelter.*—Paris is quiet and unaltered. The quotation is 47 @ 47.50. Marseilles is unchanged. Sheet Zinc, 56 @ 58; Old Remelted, in slabs, 42.50. *Iron.*—Iron works in the Ardennes are still suffering from the paralysis in that district; neither the forges nor the rolling mills receive any orders. In the Haute-Marne they are not much better off except so far as goods for winter consumption are concerned. Pig Iron for stove casting is selling there at 125 @ 130; superior sells at 117 @ 120; Second Fusion, 77 @ 80; and Charcoal Affinage, 100 @ 110. Machinery is in better request. Mixed Iron is quoted 190 @ 200; and Charcoal Pig, 167.50 @ 170. At the North Merchant Iron can now be had at the remarkably low figure of 150 @ 155 francs at the works. This decline is attracting orders. The government line of railroads has taken through adjudication 13,000 tons Rails in five lots at 207 @ 216.25 ₱ ton offered by the Denain Anzin Co. In the Meurthe and Moselle the Iron works find it difficult to compete against the low offers coming from the neighboring German Lorraine. Affinage Pig Iron is quoted there at 50 @ 58.50, put on board lighters at the blast furnaces. Soon Seraing Coke will be 45₱ @ 95₱ ₱ ton cheaper to them, and they can then compete against German Iron to better advantage. We are still very quiet at Paris. Merchant Iron sells at 155 @ 165, according to quantity. In the Vosges a good run of business is being transacted. *Coal* is better owing to the revival in the demand for family use. For industrial purposes Coal has still to go at low figures, but at these there is more doing.

BELGIUM.

(Revue Universelle).

BRUSSELS, Sept. 22, 1878.—*Iron.*—There has been an increased demand noticeable on 'change, and a good many transactions have taken place in Sheet Iron, Split Iron, Corners and Thin Sheets. From abroad larger and more frequent commands are also dropping in. We are glad to perceive that Turkey is also forwarding orders this way, thus showing that our Iron manufactures, which some years ago had been studiously misrepresented in that country, begin to be appreciated there. Railroad material is also more extensively ordered here from abroad; of course at very low figures. Affinage Pig Iron is firm at 5.15 @ 5.25 francs, and Moulage, 6.75 @ 7 for No. 5. *Coal.*—Accounts from the Coal regions of Belgium are unanimous in reporting increased activity in the amounts of Coal taken from the principal centers. This is due in a great measure to the laying in of a supply by the sugar refineries. Prices are not improved by this movement.

GERMANY.

(Borsenhalle.)

HAMBURG, Sept. 21, 1878.—*Metals.*—The German markets in general are still lacking that activity which usually manifests itself about this time of the year. *Copper* has been weak. Berlin quotes good qualities English and Australian between 67 and 72 marks the 50 kilos., and Mansfield, 72 @ 72.50; at these figures there has been continual fluctuations. We have been quiet and unchanged here. *Tin.*—This metal has led to but little business during the week. We are unaltered in this market. Berlin quotes Banca, 69 @ 69.50, and English, 66 @ 66.50 marks the 50 kilos. *Lead.*—The German markets have remained steady. We can report no change from here. Berlin quotes Tarnowitz, Hartz and Saxonian, 16.60 @ 17 marks the 50 kilos *Spelter.*—Business in this metal has been unusually quiet, and nothing has transpired either here or at Stettin and Breslau. Berlin is inactive and quotes good qualities Silesian, 18.25 @ 19.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Sept. 20, 1878.—*Tin.*—Remains very quiet, sales being limited to Billiton on the spot at 35¼ guilders the 50 kilos. For Banca, 37½ is asked and 47¼ offered.

EAST INDIES.

(Clark, Spence & Co.)

POINT DE GALLE, Aug. 27, 1878.—*Plumbago.*—Wet weather having continued to prevail to an unusual extent for the time of the year, business has been much restricted. We have no alteration to report in values, which are 50 @ 120 rupees. There have been cleared from here since the 19th ult. 1715 cwts. for London. *Coal.*—Inquiry has been rather slack during the past month, but as stocks are small and outward freights remain as before, the price of Coal is unchanged at 45/ free on board steamers. *Freights.*—Prospects continue most gloomy everywhere. *Exchange* is firmer at 1/8¾.

(J. Peet & Co.)

BATAVIA, Java, Aug. 12, 1878.—*Tin.*—The auction of the 14th inst. will comprise about 10,000 piculs. The June sale averaged 41.24 guilders per picul. *Coal.*—The market is very much overdone, and all descriptions are more or less difficult of sale. In English the only transaction recently reported is the sale of about 2000 tons Cardiff in store at 19 guilders per ton. A small cargo of Australian has been sold to arrive at 16 guilders per ton, cash, alongside, but to be weighed on shore, with an allowance of 2 % for spillage. Arrivals are the Thorwaldsen at Banjoewanzie on the 4th ult., and the Olivet at Batavia on the 18th ult. Both cargoes have been sold, but prices are not published. *Exchange.*—The two English banks now work together, raising or depressing rates as it suits them. Exchange, 11.97½.

(Schmidt, Kustermann & Co.)

PENANG, Aug. 19, 1878.—*Tin.*—Chinese have been the principal buyers at rates ranging from $18.18 to $17.75 per picul during the earlier part of the four weeks under review, and at $17.75 @ $17.92½ per picul since departure of the last mail. Transactions for Europe amount to about 2000 piculs only. Stocks remain small. Freights remain unchanged, and as tonnage is plentiful and cargo scarce, higher rates can hardly be expected for the present. *Exchange*—Rates have suffered a further decline. The banks were drawing for last mail at 3/10⅝; for the outgoing one business has been done at 3/10 @ 3/9¾.

(Gilfillan, Wood & Co.)

SINGAPORE, Aug. 24, 1878.—*Tin.*—Supplies have been on a moderate scale, and prices were steady at $18.25 until two days ago, when news of a further fall in London was received, and there are now sellers and no buyers at $18.30 ₱ picul. The Gordon Castle, which sailed for New York direct on the 15th inst., took 30 tons, making, with what had been shipped previously in the month, 220 tons to date. *Tonnage.*—The supply of disengaged vessels continues quite equal to the demand. Berth rates for London are dull at 30/ for dead weight. The Gordon Castle took 501 piculs Tin. The Edward Percy has cleared for New York without Tin on board. The S. D. Carlton has begun loading, but cannot make much progress until she gets more dead weight. For Boston there is nothing doing, and the berth is still vacant. *Exchange* declined to 3/10 for six months' sight credit drafts on London, but is now firmer, and closes at 3/10¾ ₱ dollar.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., Sept. 23, 1878.

FIRST AND FOREMOST

of the metallurgical events of the week just ended has been the autumnal meeting of the Iron and Steel Institute in Paris, a gathering which has been a success in almost every sense of the word. The opening address of the president, Dr. Siemens, was excellently composed, and contained a well-timed warning to the British members that they were not so far ahead in some matters as many of them might suppose. The president wisely avoided making his speech too long. The most useful part of it was that detailing the technological and scientific curriculum of the French educational system. Of the papers prepared for the meeting several were perforce held over for the spring assembly, but four or five were presented and promoted discussions which no doubt gave a good deal of life and animation to the proceedings which they might have lacked otherwise. The paper by Professor Jordan on the "Progress of the French Iron and Coal Industries" was of much interest, but to my thinking the paper of the whole number was that by Professor Akerman, of Stockholm, on "The most recent advances in the manufacture of Iron and Steel, as exemplified by the Paris Exhibition," which was full of most useful comparisons. The writer has evidently made the best of his time during the existence of the Exposition, and has certainly enunciated facts and deduced inferences which every iron and steel man may peruse with decided profit and advantage. Of scarcely less importance was the paper by W. D. Adamson, on "The Mechanical and other Properties of Iron and Mild Steel," in which a variety of useful experiments were plainly demonstrated.

THE TRADE OUTLOOK,

to which I must occasionally refer, does not improve, nor are the present indications such as to induce one to suppose that we shall be called upon to witness any very material change for the better during the remaining part of the present year of grace. The drop in marked iron has caused quite an average amount of recrimination among the merchants and the smaller manufacturers, but I do not suppose that anybody has so far been much the better for the change. The best producers may be assumed to have eased their consciences a little, but it does not necessarily follow that they have filled their pockets—indeed such concerns as Lord Dudley's and Messrs. Barrows may, as a rule, be said to be independent of ordinary market conditions. When their iron is within £1 or so of commoner and medium kinds the latter suffer most, and this is probably the case on the present occasion. It is hardly likely that any further alteration will be made at the quarterly meetings which begin on October 9th. The steel industries have fairly good prospects, which will have been promoted and furthered by the thorough discussions at the Institute meeting, but for the time being certain of their branches are complaining of the continued indifference of the world at large. This is particularly true of the cast steel trades of Sheffield, where matters are in no sense relieved of late. The hardware manufacturers are in the majority of instances doing a tolerably satisfactory turnover, but—and this but is now a chronic stumbling block—the profit secured is so bare that they are anything but well off. Thus generalized one can scarcely say that things are looking up, although the official export returns as to quantities are so well upheld that I am not prepared to allege that the country is distressed. I have no doubt that individuals—particularly individuals or firms in leading industries—are suffering, but the country at large is not less wealthy than heretofore.

THE NEWS FROM CANADA

anent their elections has taken us by surprise, for it is hardly too much to say that few persons in this country expected to find the Macdonald party in the majority. You will not, of course, expect me to say much here on the purely political side of the issues raised, except in so far as these bring forward the (to us) vital questions of free trade and protection. For the moment the Canadians would appear to have gone in most heartily for protection—of which we assume Sir John Macdonald to be the champion—and to have arrived at their decision to oust the Mackenzie ministry with peculiar suddenness and unanimity. This retrogressive movement may be a two-edged weapon, if fiscally embodied, for it may cut against your manufacturers well as against our own; hence it may not in the long run do us so much harm as appears likely at the first blush; indeed Canada has been so good a market for some of your manufacturers that you may possibly feel the blow severely for a time. All this, however, is necessarily conjectural reasoning, inasmuch as the protective tariff is as yet in its first period of inception and may be a long period emerging from its embryo condition.

ANOTHER BLOW

to the hopeless prolongation of the much-wished-for revival of trade has fallen to-day in the shape of the news (received by telegraph from Calcutta) of the contemptuous affront given by the Ameer of Cabul to our mission. If the full particulars of the affair bear out the original outlines there will be more heard of the matter—indeed the metropolitan newspapers of to-day with one voice declare that the hand of Russia is clearly descernible in the insult, and that there must be a speedy and effectual reparation exacted. The worst part of the outrage is that the Russian envoy is a guest at the Ameer's court. The affair is thought so seriously about, in fact, that a direct war with Russia would not surprise me. At all events, the prospects of trade are certain to suffer.

THE LOCK TRADE

of South Staffordshire is not so brisk as it might be, and is at length being affected by external competition. I am credibly informed that not only are American locks being pushed by importers in all directions, and especially among the builders and ironmongers, but that French locks are being brought into the country at prices and under conditions which give promise of a fair amount of business being transacted. My correspondent especially dwells upon the capital finish of the French locks and keys, to which I can add personal testimony; indeed, so far as the exhibits at Paris tend to show relative merits and demerits, I consider the French about the best in all the show, price and quality considered.

SCOTCH PIG IRON

has been flat and is hardly likely to become stronger in the teeth of the renewed political troubles now looming on the Eastern horizon. Over 1000 tons have been added to Connal's stores, where the quantity stored is now 193,840 tons. There are 92 furnaces blowing as against 87 same date last year. Total decrease in shipments to date, 50,689 tons.

Writing from Glasgow, Sept. 21, Messrs. James Watson & Co. said: "The Scotch pig iron market has been dull during the past week, opening on Monday at 48/2, cash, price has gradually receded to 47/4, cash, at which business was done to-day, closing rather firmer with buyers at 47/5, cash, sellers very near. As will be seen from the undernoted quotations, Makers' Iron is rather easier. Shipments last week were 9792 tons as compared with 8690 tons for the corresponding week of 1877." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	48/	47/
Gartsherrie, "	55/	51/
Coltness, "	57/6	53/6
Summerlee, "	53/	48/
Langloan, "	56/6	50/
Carnbroe, "	49/	47/6
Calder, at Port Dundas	55/	47/6
Glengarnock	53/	49/
Eglinton, at Ardrossan	48/6	47/9
Dalmellington, "	48/6	47/9
Shotts, at Leith	56/6	53/6
Kinneil, at Bo'ness		49/6

Messrs. John E. Swan & Bros. and William Colvin & Co.'s quotations are similar.

In last week's shipments from the Clyde were included the following: From Glasgow to the Mediterranean—32½ tons iron castings, £194; 10¼ tons wrought-iron tubes, £132; unenumerated iron manufactures, £112; sewing machines, £533; ½ ton unenumerated iron and steel, £26; 12 tons wrought iron, £194; 6 tons iron bolts and nuts, £70; machinery, £27. Rouen—Sewing machines, £2220; 3½ tons wrought iron, £46; 1¾ ton iron manufactures, £14. Montreal—18 tons bar iron, £100. Calcutta—96½ tons iron costings, £896; 4 tons galvanized iron pipes, £156; boiler and fittings, £870; 3½ tons wrought-iron tubes, £62; machinery, £7929; 4¼ tons bar iron, £51; chains, £5; emery wheels, £3; 7 tons wrought-iron work, £451; 1¾ ton wrought-iron roofing, £31; 1½ tons tires, £150; locomotives, £1530. Odessa—5 tons cast iron, £78. Quebec and Montreal—Machinery, £184; 328¾ tons iron castings, £1470; 10 tons bar iron, £67; 1½ ton malleable iron work, £42. Demerara—Galvanized iron goods, £77; machinery, £4000; chains, £54; iron hoops, £13; bar iron, £6; 3¼ tons wrought-iron tubes, £54; wrought-iron work, £110; 21 tons iron castings, £636. Port Natal—54¼ tons bar iron, £355; 45 tons iron castings, £820. Rangoon—1 ton wrought iron, £522; iron chain, £32; 12 tons iron castings, £473; crab winches, £12; nails, £12; unenumerated cast iron, £68; 251½ tons bar iron, £1768; 21¼ tons galvanized iron, £363; unenumerated iron, £185. The amount of manufactured iron exported from Glasgow last week was: Bar, £6 and 338½ tons; hoop, £13; malleable, 1½ ton; wrought, £110 and 42¼ tons. Total, £129 and 382¼ tons. Same period last year, £10 and 58½ tons. From Greenock: Rio de Janeiro—10 cwt. bar iron, £3. 12/ From Grangemouth: Rotterdam—1¼ ton iron castings.

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

Neither in the one nor in the other district thus indicated are iron trade movements of a satisfactory nature. The drop of ten days ago has to a great extent discounted what might, under other circumstances, have been the tactics of a certain—or, rather, an uncertain—class of producers or jobbers, but the general effect on the legitimate market has not been of marked importance. Some of the merchants—particularly those who hold stocks of some bulk—declaim in strong terms against the change, and others outside their ranks declare they can see no benefit accruing out of and by the alteration. On the opposite side are naturally ranged the consumers and such of the merchants as have for some time past preferred to buy from hand to mouth. These are favorably impressed, and urge that to take this step at the time when it was taken was an excellent thing, inasmuch as it obviated all the uncertainty, speculation and distrust usually observable for the whole of the fortnight or three weeks prior to the beginning of the ironmasters' quarterly gatherings. Hardware I have referred to in an earlier paragraph, and I will only supplement my remarks by stating that American nails and tacks are being "tried" here and there, but are not selling freely, owing to their prices being too high.

SOUTH WALES AND MONMOUTHSHIRE.

In the Ebbw Vale district around Newport business has been greatly hindered by the dismal aftermath of the Abecarne explosion, which has practically ruined one or two villages. At the other large works, Dowlais excepted, very little is being done in steel rails, but at London there is a steady and no doubt remunerative production of steel ship plates and Siemens-Martin large castings. The tin-plate manufacturers of the Swansea district are again talking of reducing production. Selling prices are so low that it would probably pay some of them to shut up altogether.

IN CLEVELAND

a somewhat better feeling is said to have been current during the week on the strength of rather large shipments, yet taking into consideration a further fall of prices I fail to see precisely where "the larfter comes in." Some of the foundries are moderately engaged, and there is a rumor that a large plate order has been taken, but on the whole Cleveland is still producing much less than it might do. Bolckow, Vaughan & Co.'s Middlesboro' works are rapidly being made suitable for steel manufacturing. At their Eston establishment Spanish and Algerian ore is being used on a large scale. There the rail mills are running seven days weekly. That looks well, I confess!

FOR CYPRUS

the government have ordered 100 iron houses from a large London house, and have a second and like favor ready for giving out. It might be a good speculation for the government to erect iron barracks in that island, and, generally speaking, to throw a little money away for the benefit of the iron trade as well as for "honor and glory."

FROM SHEFFIELD

complaints are not less numerous and certainly not less pronounced than heretofore. Not only is trade bad—and worse—in all the leading industries, but the specter, in the shape of foreign competition, is penetrating every cupboard. I have pretty good reason for saying that American goods—scythe snaths, locks, iron planes, &c.—are being brought into Sheffield in much larger quantities than is stated in the recently published report of Dr. Webster, the American Consul, and that German goods, particularly scissors, are being imported on a large scale. The trades unions have pretty effectually killed the scissor and some other industries, the loss of which is a sore blow for steelopolis. German tailors' shears and ordinary scissors can be had delivered from Solingen 30 per cent. under local quotations. In cutlery and many kinds of tools precisely the same sort of thing has to be complained about. As a matter of fact—and to put the thing broadly and plainly—the trades unions and not a little supineness on the part of manufacturers have together pretty nearly ruined Sheffield.

THE METAL MARKETS,

like everything else, are quiet, and there is no disposition toward advanced figures, except in the cases of two or three brands of copper, which have been "operated" in several times of late. The weekly report of the *Ironmonger* is: "*Tin-Plates* are rather quieter, in part owing to certain disclosures as to the manner in which the Liverpool export business has lately been transacted, and in part owing to the extremely unremunerative nature of prices. *Copper* has remained steady, good ordinary brands Chili bars selling at from £60 @ £60. 5/, and named brands at £60. 10/. Australian is unchanged. During the week 696 tons of Cape ores were sold by tender at about 11/9 per unit, for 31⅛ per cent. produce. *Tin* is steady at £57. 5/ @ £57. 10/ for Straits and Australian; English ingots, £62. *Lead* has been dull, the selling prices being £16 @ £16. 5/ for English, and £15. 17/6 for Spanish, without silver. *Zinc* is unaltered. At Messrs. W. T. Sargent & Son's fortnightly sale on Thursday 140 tons were sold at £20.10/. *Spelter* is quoted at £17. 17/6 @ £18 for ordinary brands. *Quicksilver* at from £6. 18/9 @£7. *Antimony* at from £49 @ £51."

The Lombard Exchange official report is: "*Copper.*—Steady, with business in G. O. B. Chili bars at £60, spot; named brands quoted £60. 5/ @ £60. 10/; Burra, £68. 10/; Wallaroo, £69. 10/; English tough, £66 @ £67; best selected, £67 @ £68; strong sheets, £71 @ £72; Indian sheets, £70. *Tin.*—Easier; sales of Straits and Australian at £57. 7/6 @ £57, spot; English ingots, £62. *Iron.*—Scotch pigs, £47. 4d., cash. *Lead.*—English pig £15. 17/6 @ £16. 5/; soft Spanish, without silver, £15. 17/6. *Spelter*, £17. 15/ @ £18 for ordinary brands. *Zinc.*—No sales. *Quicksilver*, £6. 17/6 @ £6. 18/9. *Antimony*, £49 @ £51."

Messrs. Harrington, Horan & Co. (Liverpool) report: "On the 2d inst. Chili copper charters for the second half of August were advised as 4000 tons fine, consisting of 3500 tons bars, and 300 tons ore and regulus for England, and 200 tons bars for the Continent. The effect on this market was depressing, and we reduce our quotation to £60 per ton for good ordinary brands, which price, we believe, is the lowest ever published, although about 250 bars sold privately during the past week at £59. 10/ @ £59. 15/ ₱ ton. The comparatively large export of copper from Chili is not owing to any increased production there, but arises from the fall in the rate of exchange caused by the temporary suspension of specie payment, inducing holders to transfer part of their stock from Chili to Europe. The sales of furnace material comprise 386 tons Bolivian regulus at Swansea, and 13 tons Chili regulus here at 12/; 550 tons Bolivian ore at 11/6, 25 tons English and 17 tons Rio Tinto precipitate at 12/1½ per unit. Imports of Chili copper during the past fortnight, 1395 tons fine; delivery of Chili copper during the past fortnight, 1493 tons fine. Quotations are: Chili bars, £60 @ £61; ditto ingots, £67; ditto ore and regulus, 11/6 @ 12/; Corocoro barilla, 13/6. Arrivals here during the fortnight of West Coast, S. A. produce: Illimani, from Valparaiso, 63 ores, 648 bars, 145 ingots; Pleiad, from Valparaiso, 13 regulus, 312 bars; Bertha, from Mollendo, 525 ores. At Swansea—Bessie Jose, from Tocopilla, 551 ores, 385 regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—Liverpool, 917 regulus, 16,948 bars; Swansea, 1622 ores, 6907 regulus, 2098 bars, representing about 22,891 tons fine copper, against 18,980 tons September 15, 1877. Stock of Chili copper in Havre, 7472 tons fine; stock of Corocoro barilla in Havre, 2894 tons fine; stock of Chili copper afloat and chartered for to date, 11,600 tons fine; stock of foreign copper in London, chiefly Australian, 6300 tons fine. According to advices from Valparaiso the exports of fine copper from Chili and Bolivia to all parts of the world during the first six months of this year were 22,082 tons. The relative proportions of the different descriptions of copper being: Bar copper, 82.85 %; copper regulus, 14.38 %; copper ore, 2.77 %. *Tin.*—Market slow, at £57. 10/ for Straits and Australian, £62 for British and £50 for Peruvian; 24,200 slabs Banca tin will be offered in Amsterdam on the 25th inst. *Lead.*—Market quiet at £16. 2/6 @ £16. 7/6 for ordinary shipping brands and £16 for Spanish, without silver. *Spelter.*—Market dull at £18 ₱ ton for ordinary Silesian brands."

Speaking of the new Pittsburgh and Lake Erie road now nearly completed from Pittsburgh to Youngstown, Ohio, a Pittsburgh paper says: With these connections in and about Pittsburgh, the Mahoning and Shenango Valleys, and Cleveland, the cars of this line will run past 135 iron and steel works, 35 glass manufactories, and hundreds of other works too numerous to mention here. There are on the Pittsburgh Division of the B. & O. R. R. 3510 coke ovens, with a capacity of more than 300 carloads per day, most of which will be used in works located on or beyond this line. More than 1000 tons per day are now used at and beyond Chicago. Much of it goes to the Silver Regions of the Rocky Mountains and some even now to San Francisco. Just below the city the road strikes the Pittsburgh coal field, the largest yet discovered, as well as the best. This coal will reach Cleveland on a much shorter line by this route than it does now, via "Pan Handle" and C. & P. Railroad.

INDUSTRIAL ITEMS.

MAINE.

The Lewiston Machine Co. have elected the following directors: N. W. Farrell, A. D. Lockwood, C. J. Barker, James Dempsey, Nelson Dingley, Jr., J. F. Cobb, J. C. Colburn; treasurer, Fred Kelley.

The large machine shop near the Augusta dam has been rebuilt and is being stocked, anticipating commencing work this month.

The new Union Water Power Co. was organized by choosing the following directors: Josiah G. Abbott, Jacob Edwards, Amos D. Lockwood, Theophilus Walker, William P. Frye, William B. Wood.

MASSACHUSETTS.

Last spring an enterprise was entered into by a well-known Boston firm for the manufacture of gas fixtures and all kinds of fine brass castings, gate railings, furniture trimmings, &c., of the best quality and most elaborate designs. The concern is known as the "Shreve, Crump & Low Mfg. Co.," and is located on Albany street. It has now under contract several important orders, among which may be mentioned one for 12 elegant bronze lamp posts for the new City Hall of Providence, R. I. The company fill orders for original designs for their own customers who desire special arrangements in furnishing and arraying residences, halls or churches. Fifty hands are kept constantly employed, and their products are rapidly taking the place of the foreign goods of like description.—*Commercial Bulletin.*

RHODE ISLAND.

E. Jenckes & Co., manufacturers of ring travelers and mill supplies, who for a number of years occupied the Old Slater Mill at Pawtucket, have removed their machinery to the Jenckes mill.

The Rhode Island Locomotive Works have recently built 20 locomotives for the New York Elevated Railway. These engines are smaller and of a different pattern than those commonly used on ordinary railroads. They are of two sizes. The smaller have four driving wheels, the water tank being above the boiler, making them appear very stout and clumsy; the larger have, besides a like number of driving wheels, a trunk behind, above which a tank and a portion of the cab are located. The cabs of all of them are very large and roomy.

NEW YORK.

John Stephenson, of New York city, the coach and car builder, is furnishing the outfit for a tramway between Calais and St. Pierre, in France, which is being constructed with English capital, and some of the cars are now in course of shipment via Southampton. The capitalists referred to have organized to construct and equip tramways wherever they can obtain certain concessions, and have already built roads on this plan in Swansea, Barcelona and elsewhere.

The report that the employees of the nail factory of the Buffalo Iron and Nail Co. had scattered by reason of the stoppage of work is without foundation. The factory is at present running only in part, but could be started full at once did the condition of trade justify.

The Remington rifle is rapidly gaining favor with those who are the best judges of the merits of a good rifle for target shooting. A most remarkable score has been made recently at Washington by Mr. J. Partello, who with a Remington Creedmoor of caliber 45, the regulation rifle of the National Association, scored 224 out of a possible 225. Mr. Partello first made a string of 15 bull's eyes on the 800 yards range, and then followed it up with 12 bull's eyes on the 900 yards target. This made 27 consecutive bull's eyes. This was followed by a "center" and then another uninterrupted string of 17 bull's eyes brought the score to the figure given.

John Williams, 115 to 121 East 13th street, is doing some very beautiful work in brass ornaments, especially in the combination of choice pottery with polished brass, and in the reproduction of the best foreign art work in metals. There is a large and steadily growing demand for this kind of work, which promises to create in this country a very important industry. Mr. Williams is now making a large brass cinerary urn to the order of a customer who is impressed with the advantages of cremation, and who intends to use it for the safe keeping of his ashes when they shall be gathered up from the bottom of the furnace. Whatever value his descendents may place upon his ashes, they will undoubtedly prize the urn as a piece of *bric-a-brac* of unusual interest and decorative utility.

Shapley & Wells, of Binghamton, engineers and machinists, are very busy and have many inquiries which are likely to lead to business and consequently keep them engaged for some time. Among their specialties is their "engine and boiler combined," of which they have made a great number, both for home and export. They claim that it is the most economical and durable engine now made. They also manufacture a patent bark-grinding machine and all machinery used in a tannery. A short time ago they completed the ironwork for a building the front of which is all iron, situate at corner of Chenango street, Binghamton, which is considered one of the handsomest buildings in the city.

The L. Bolles Hoe & Tool Company, of Binghamton, Mr. C. A. Wilkinson, secretary, manufacture as specialties, forks, rakes, potato hooks and hoes. Their trade in the Southern States on the "Bolles handled planters" and cotton hoes has reached such dimensions, together with an increase of trade in the Northern and Western States on their regular "cast-steel socket" and "shank hammered hoes," that they are at present running their entire force and works on hoes alone. All their hoes are plated under the hammer, which enables them to give proper form, elasticity and toughness to the metal.

The Jones Scale Works, of Binghamton, are very busy. They report their business as having increased to double what it was last year.

McEwen Bros., of Wellsville, engineers and machinists, are at present fully engaged and make as specialties, oil and steam engines, mill gearing and all kinds of machinery connected with tanneries.

George W. Tift, Sons & Co., of Buffalo,

are employing about 250 men, and are at present manufacturing steam engines of from 10 to 25-horse-power and oil engines of 12 to 16-horse-power. They also make all kinds of architectural work, and are making the ironwork for the new Masonic Temple at Elmira, which will have a self-supporting iron front.

R. Dunbar & Son, of Buffalo, engineers and general machinists, manufacture engines of from 5 to 200-horse-power, and also various kinds of architectural ironwork and mill gearing. They are at present making a machine for trussing barrels. This machine is very different from any now in use and will truss and finish the barrel complete. They also manufacture the Eagle turbine water wheel, which has given a very high percentage of power.

The Shepard Hardware Company, of Buffalo, are very busy and likely to be so all winter. They are employing upward of 50 men, and make as specialties fluters, fluting machines, blind hinges, &c., and various kinds of builders' hardware.

Mr. A. R. Whitney is erecting the section of the New York Elevated Railroad contracted for by him at the rate of 75 tons per day, and expects to have the work finished to Harlem River by December 31. The grand car depot for the joint use of the two elevated railway companies, in course of erection near the upper extremity of the line, will be ready for business promptly on time.

A. R. Corcoran, of John street, this city, has just shipped two of his windmills to Rev. Mr. Ward, missionary at Bombay, India; also two to Christchurch, New Zealand. The freight to India by steam, *via* Glasgow, was only £14 for 171 cubic feet. Mr. Corcoran has just received a letter from the agent of the Prince of Wales, proposing to introduce windmills for drainage purposes on his estates in the Lincolnshire fens, comprising a large area. He writes that in the rural districts of England where they were paying $2.50 per week for wages ten years ago, the present rate is $3.50 to $4.

NEW JERSEY.

R. Heinisch & Sons, of Newark, manufacturers of all kinds of shears, are very busy and look forward to continued activity.

John Toler, Sons & Co., of Newark, makers of different kinds of furniture castings, are fully engaged on their various specialties.

Benjamin Atha & Co., of Newark, manufacturers of file, spring and tool steel, are extremely busy running double turn.

Hewes & Philips, of Newark, have recently begun making printing presses in addition to their other specialties.

PENNSYLVANIA.

The Erie City Iron Works, as we learn from their New York agent, have built this year more boilers than before in any one of the 25 years of their existence. The number built up to September 1st was 350, and orders were received for 400 all told. Their export trade is 25 per cent. in advance of last year, and New York trade is more than double.

Wm. Sellers & Co., of Philadelphia, have taken the bulk of the recent order from New South Wales for fine machine tools, amounting to some $25,000.

Hon. Wm. L. Scott, of Erie, announces his intention to start up his rolling mill on a full scale between this and December. He expects to employ 150 hands. He thinks he can resume now with some chance of making a little money, and says that no time since the panic of 1873 have the prospects been so bright for a general revival of business.

The quantity of iron made at the Warwick Iron Company's furnace week before last was 357½ tons.

The Philadelphia and Reading Railroad Company are endeavoring to introduce pure anthracite coal into England and France. Mr. Edward Quintard is in Europe astonishing the natives by giving away a stove with every ton of coal he sells, and in Paris he has an agent to show the Frenchmen how to fire the stove. A cargo of 150 stoves was recently invoiced to Mr. Quintard, and another will soon follow.—*Times and Dispatch.*

The Lancaster Watch Factory has shut down for one week to secure $30,000 additional capital. If Lancaster does not furnish the money the works will be removed to some other point.

The iron and chain works at Port Clinton, Schuylkill county, experienced a scarcity of water during the past summer. An immense dam has been constructed in the Schuylkill, and no further scarcity of water is apprehended.

Work in the machine shop and pipe mill of the Reading Iron Company was suspended last Thursday morning for several days owing to the necessity of making repairs to the engine driving the machinery and furnishing the blast to the furnaces.

The rolling mill firm at Brownsville are now styled Jones, Lewis & Co. They are running the mill regularly on contract for making tube iron for the National Tube Works at McKeesport. In every way their prospects are brighter than ever for a success as a rolling mill.—*Brownsville Clipper.*

We clip the following from the Sharon *Herald* of the 4th inst. concerning Sharon iron works up to Sept. 28: At the Westerman Iron Works, puddle, hoop, guide and sheet mills double turn. Bar mill single turn, nail plate mill, nail factory and both spike machines went on Thursday morning. There are orders enough ahead to keep everything in this establishment, except the nail factory, in operation until the close of the year. Chain factory went on Monday of the present week. This mill has earned a splendid reputation during the panic. When other works shut down or run half-time, pursuing a doubtful policy because it was vacillating, this establishment kept all its fires burning, generally double turn; never took an undue advantage of its men, but always paid in full what they agreed to pay. No chicanery of any sort, but pursued the policy of treating their workmen like men, and to-day there is not a man in the mill that does not take a personal interest in the works, and the result is that their iron stands at the head of the list. At Middlesex six puddling furnaces on, making some extra good iron which will soon make a market for itself.

Wm. M. Kaufman & Co.'s furnace No. 2, at Sheridan, was blown in last Thursday afternoon.

The Lehigh Valley Emery Wheel Company, at Weissport, are running full time.

PITTSBURGH AND VICINITY.

Messrs. Jones & Laughlin, of the American Iron Works, Pittsburgh, have ordered from the Safety Low-Water Signal Company, of Tenth street, South Side, eight more boiler signals.

The Isabella Furnace No. 1, at Pittsburgh, has made in a continuous blast of 943 days 75,723 gross tons of iron, and is still doing good service.

Robinson, Rea & Co. have constructed a fire-proof building near their works on the South Side, which will be used as a depository for patterns.

The contract for building the depot of the Pittsburgh and Lake Erie Railroad, at the south end of the Monongahela suspension bridge, has been awarded to a Philadelphia firm.

The new brick foundry building of Lewis, Oliver & Phillips, at the foot of Twelfth street, South Side, is nearly completed. It is of the same dimensions and occupies the site of the ironclad structure destroyed by fire during the summer.

Spang, Chalfant & Co.'s mill at Etna is about ready to start after a short stop for repairs.

Graff, Bennett & Co.'s mill at Millvale is on double in all departments. They are using coal instead of gas in the furnaces.

Morehead & Co.'s mill at Pittsburgh has again started up, after having been idle over a week for repairs.

Jacob Reese, late of Reese, Graff & Woods, is now engaged in the metal business in Pittsburgh.

The manufacture of insulated telegraph wire has been commenced at the National Tube Works, McKeesport. In making the wire a telegraph wire is inserted in a glass tube of the same length and sufficiently large to admit the wire easily. The glass tube is then inserted in an iron tube just large enough to admit the glass tube. They are all then placed in the furnace and heated, and then run through the rolls, compressing copper wire, glass and iron tubes all into one mass, but without crushing them. The ends are then ground to a convex surface and the sections coupled together like gas pipe, the convex ends allowing the centers to strike first, establishing the electric connection. The councils of Philadelphia have ordered the removal of telegraph poles from the streets of that city, and the invention is designed to meet the demand that is likely to arise for wire that can be worked successfully underground.

Messrs. Thompson, Epping & Carpenter, of the Keystone Steam Pump Works, 882 Penn avenue, have just completed two very large pumps for the new water works of Butler, Pa. They are each 20-inch steam cylinder, 10-inch water cylinder and 36-inch stroke, with 7-foot fly wheels, and weigh over 9 tons each, and have a united capacity of 90,000 gallons per hour, and are the heaviest pumps for the size ever built in this city. The elevation of the reservoir to which the water is to be raised is 325 feet; length of discharge pipe about one mile. These pumps are lined with brass, which, by a new device, can be instantly turned as it becomes worn on the bottom. These pumps are used in almost all of the large Pittsburgh mills and oil refineries, and have given perfect satisfaction in every case, one never having been replaced by any other pump. Their simplicity recommends itself to all engineers, as the whole pump does not have to be torn apart for repairs, as any part may be removed without interfering with the rest. They are daily doing their work at a pressure of from 100 to 400 lbs., pumping water nearly boiling hot.

A novel and superior combination for a wall hose attachment has been introduced to the trade this season by Messrs. Bailey, Farrell & Co., Pittsburgh. By extending a rod from the outside wall plate to the stop valve on the inner side of the wall, the flow of water can at all times be controlled from without, avoiding the necessity of entering the building to turn the water off or on. They are constructed in a substantial manner and present a unique appearance on the face of the wall, being sometimes silver-plated for marble fronts, &c.

The Edgar Thomson Steel Works, Pittsburgh, are at present consuming about 8000 tons of pig iron per month. They are taking the products of four of the furnaces located in this city, viz: the Lucy, Soho, Eliza and Shoenberger.

NORTH CAROLINA.

The Ore Hill Furnace at Ore Hill, Chatham county, which has been out of blast for a number of years, will probably resume operations when the railroad now building at that place is completed. This will probably be some time in 1879.

OHIO.

Messrs. Younglove & Co., of the Architectural Iron Works, Cleveland, are employing over 100 men. They are now manufacturing 300 mail catchers for the government, and some 500 cider mills and about 500 corn shellers, which are to be shipped to different parts of the country.

Messrs. H. Wernet & Bro., of Canton, have supplied orders for more than 600 of their Canton Star copper kettle. They also make all kinds of copper work, cheese kettles, candy cans, copper dippers, &c.

The Canton Spring Company are running full time and are full of orders. Their average make per day is about two tons of carriage springs, besides 250 pairs of their well-known seat springs.

Messrs. C. Aultman & Co. of Canton began this season the manufacture of a self-binding machine which is becoming very popular. This company have within the past year and a half built more than 260 of the Canton monitor portable engine, which is finding large sales in all parts of the country. In addition to these they have made 1100 Sweepstake thrashers and 5000 Buckeye mowers and reapers. They have lately shipped several machines to South Africa and the West Indies. Their show of mowers at the Paris Exposition attracted a great deal of attention, and some of their machines received premiums.

The Diebold Safe and Lock Co. at Canton are running full time and have a full supply of orders on their books. Their average make is about 10 safes per day.

Mr. Richard Brown, who for a long time has been the mill manager, has sold his entire interest in the firm of Brown, Bonnell & Co., Youngstown, to Jos. H. Brown & H. C. Ayer. Mr. Brown will remain with the old firm until a suitable man for his place is found, when he will retire from business.

Messrs. McFarlan & Nottingham of Cincinnati have recently formed a copartnership for the manufacture of engines, boilers and machinery on Second street, between Plum and Central avenue, where they are in full operation. In connection with the above business they purchase and keep for sale scrap iron and old metals.

Messrs. Theo. J. McGowan & Bliss of Cincinnati have recently formed a copartnership and begun the manufacture of the "Boss" steam pump, which they make a specialty. They also keep for sale the McGowan & Buckeye pumps of various sizes. They have just issued a handsome descriptive and illustrated catalogue of pumps, with a price list. Their office and works are at Nos. 141 and 143 West Second st.

Messrs. John H. McGowan & Co. are running their works to their fullest capacity, principally upon pumps. They have sold 535 of their "Rival" pumps within the past 17 months, and are at present behind their orders. They are largely engaged in steam, gas and water fitting, for which they have a large trade.

Messrs. E. L. Harper & Co., Cincinnati, agents for the Winona Furnace, advise us that the furnace is working very satisfactorily, making a choice No. 1 iron, very strong and of excellent softness. Great care is being used in grading the iron.

WISCONSIN.

The blast furnace of the Appleton Furnace Co. is run exclusively by water, using three turbine wheels—one for blowing engines, one for crusher and pumps, and one for hoist. They use no steam whatever, and claim that it is a saving of wages, of repairs and of engineering.

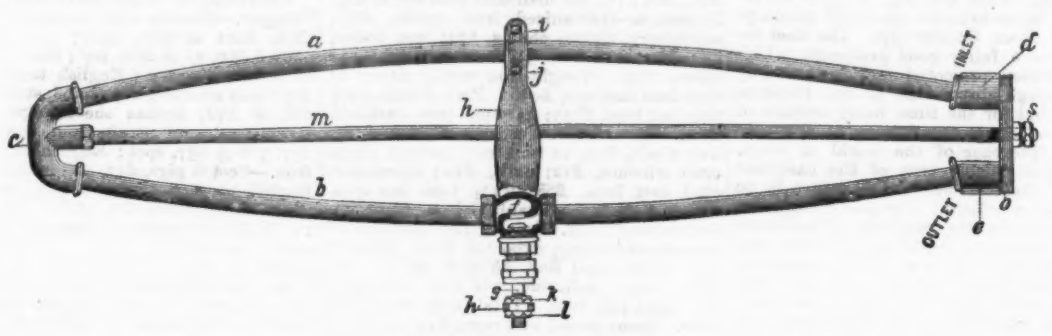
TENNESSEE.

A letter in the Chattanooga *Commercial* from South Pittsburgh says: "The Southern States Coal, Iron and Land Company have just completed a large reservoir with a capacity of about 50,000 gallons on the side of the mountain here, and are now laying a three-inch main throughout the town. This will give an abundant supply of good freestone water. A meeting was held here on Thursday evening to discuss the sanitary condition of our town. It was very well attended, and it was unanimously agreed that there was no cause for alarm or necessity for quarantine. Many lies have been circulated about our having cases of fever here, but the health of the town is better now than it has been for several months. The new saw-mill at this point commenced operations this week, and is now doing good work."

MISSOURI.

A meeting of first mortgage bondholders of the St. Charles Bridge Company was held in New York on the 25th ult., at which over $300,000 worth of bonds was represented. The meeting voted against exchanging their first mortgage bonds, which became due Oct. 1, 1878, for bonds of the St. Louis, Kansas City and Northern Rail way. A committee, consisting of F. H. Cassett, Henry Day and George F. Betts, was appointed to call another meeting of bondholders to further consider the subject.

A Victim to Science.—A sad accident occured lately at the Gymnasium at Prague. Professor Fischer was found poisoned in the physical laboratory. He was only 25 years of age, but a person of the greatest promise, by reason of his great abilities and industry and his devotion to chemistry. All the circumstances connected with him exclude the suspicion of suicide. All that is known of the catastrophe is that, being in the laboratory, he sent a servant to the store-keeper for some sal-ammoniac and some cyanide of potassium. He mixed them and tasted the mixture, saying to the servant, "Science has advanced so far as even to be able to render harmless so dangerous an agent as cyanide of potassium." But he had scarcely tasted the mixture when he was seized with violent pains. He at once told the servant to fetch a physician, but before he came Dr. Fischer was beyond human aid. He was known to entertain the persuasion that cyanide of potassium could be rendered harmless, and the problem of how to accomplish this was a frequent object of his meditations. A memorandum on this theme was found among his papers. Doubtless he fell a victim to a rash experiment.



BARR'S PATENT STEAM TRAP.

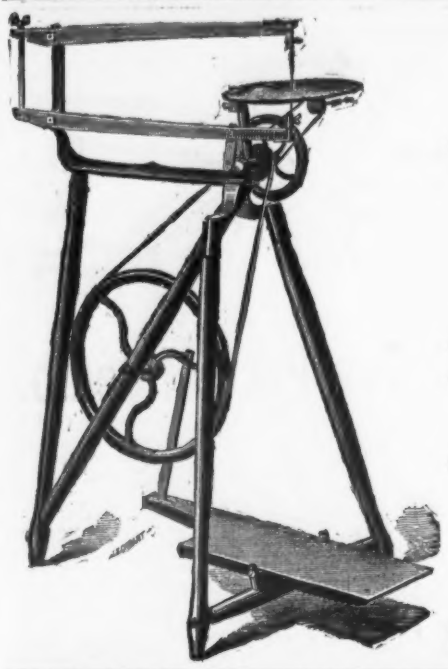
Barr's Patent Steam Trap.

Messrs. Pancoast & Maule, 243 and 245 South Third street, Philadelphia, are manufacturing an excellent device in the way of a steam trap, which is shown in the accompanying illustration. In this *a* and *b* are two tubes united at one end by the casting *c*; *d* and *e* are two castings attached to the free ends of the tubes *a* and *b* respectively, and having an orifice in each, the one in *d* for the admission of steam, and the one in *e* for the escape of the water formed by condensation; *f* is an ordinary globe valve having a smooth stem, *g*; *h* is a yoke firmly bolted to the tube *a* by the nuts *i* and *j*, and also to the valve stem *g* by the nuts *k* and *l*; *m* is a rod, one end of which is firmly secured to the casting *c*, and the other end passing through the casting *o*, and secured by the nuts *s*, which also regulate the movement of the valve. The casting *o* is fitted on projections on the castings *d* and *e*, and thus the whole trap is securely held in place.

The operation is as follows: Steam enters through the opening in the casting *d*, passes through the tube *a*, casting *c*, and into the tube *b*, heating both tubes, which immediately expand. As the tubes are prevented from longitudinal movement by the rod *m* they spread or "bulge" apart, the tube *a* carrying the yoke *h* and the valve stem *g* in one direction, and the tube *b* the valve *f* in the opposite direction, thus closing the valve and preventing any escape of steam. As soon as condensation takes place and the tubes *a* and *b* contain water, they cool, contract, the valve opens and allows the free escape of the water, through the valve, balance of tube *b* and opening in the casting *e*. As soon as the steam, following the water, enters the tubes, they again expand and close the valve. This operation is repeated automatically as long as there remains any steam in the pipes.

This trap being operated by the variation of heat between hot water and steam, and the temperature of steam increasing on an average of 1 3-10 degrees for every pound of additional pressure, it is so sensitive that it can be set to open or close at any given pressure by simply turning the nut *s*. A half turn of nut *s* will entirely open or close the valve, which should be remembered when first adjusting; also, that this nut is the only point at which the adjustment is made; the nuts on valve-steam never need be moved. If set to close at 5 pounds, the moment the heat of that pressure is reached the trap closes and only allows the escape of the water of condensation. Or if set to 10 pounds, 15 pounds, 20 pounds, 25 pounds, or any pressure given will immediately close the moment that pressure is reached. Likewise when the same pressure is reached in descending, the trap will open and remain so until its set pressure is again reached. This peculiarity of the trap prevents its freezing, as it can be set so as to open at any low pressure, and as soon as the steam remaining in the pipes reaches the set pressure, the trap opens and the steam blows the pipes and trap clear of water. From its flat and compact shape it occupies but very little room, and can be placed in any position without interfering with its working, either laid on its side, stood upright, hung down, laid against a wall, on the floor, or hung up under the joist; all that is required is to connect the steam pipe with the casting *g*. This feature permits of its use where no other trap can be used in cramped positions on shipboard and in coal mines, as it may effectively be applied in any position, requiring only the actual space to place it. If at any time sediment from the pipes should get under the valve and prevent its closing tightly, by simply loosening the nut *s* and allowing the steam to blow through freely, it will clear itself. When clear, tighten the rod until the steam stops issuing. If this does not clear the valve, by unscrewing the bottom nut on the stem *g*, and the bolts *i* and *j*, the yoke may be taken off, and the valve taken apart like any ordinary globe valve, cleaned, and replaced in ten minutes' time. This trap is always open when not in use, and requires no attention to discharge the air in the pipes when steam is first turned on, and it will also discharge any air that may accumulate while running. When it is required to use the steam further on, it can be done by attaching a T-shaped casting to the steam pipe, and the trap to the bottom of the T, thus perfectly drying the steam.

The Metric System of Weights and Measures.—The International Congress on Weights, Measures and Coins, at Paris, discussed at great length the merits of the uniform metric system, and the following important resolution received the unanimous consent of the conference: "The congress learns with pleasure the progress of the metric system; it deplores that England, Russia and the United States have not yet entered into the same path; and it is of opinion that the governments of these countries should be solicited to give effect as early as possible to an act of progress so eminently useful to science, commerce and international relations." Immediately after the sitting at which this resolution was passed the British and American members met together, Col. Smith, F. R. S., in the chair, and resolved: "That pursuant to a resolution adopted by the International Congress for the unification of weights, measures and coins, at Paris, on the 4th Sept., 1878, we, the members of the said body from Great Britain and the United States of America, respectfully petition our respective governments to appoint a mixed commission to consider the adoption of the metric system by both countries, and to make all necessary recommendations for the proper legislation to secure the desired end. That Col Smith, F. R. S., England, and Mr. Appleton, of the United States, be requested to transmit the above resolution to their respective governments."



THE ROGERS SAW.

With Drilling Attachment and Iron Table,

Adjustable for Inlaying.

All the working parts of iron and steel. Weight, with box, 30 pounds.

Hight of table above the floor, 32 inches; 12-inch belt wheel; 5 inch balance wheel; arms, 18 inches in the clear; latest improved clamps; round belts; extra drills and wrench.

The iron and steel parts are polished or japanned. The wood is painted dark.

It is not as good as our Lester Saw, but is much better than any other cheap machine in the market.

Price, including all the attachments and the box, $3.00.

MILLERS FALLS CO.,

74 Chambers Street, - - NEW YORK.

Established in 1854.

STEPHENS & CO.,

Manufacturers of **U. S. Standard BOXWOOD and IVORY RULES.**

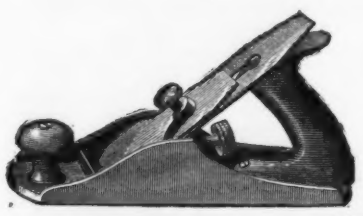
Also Exclusive Manufacturers of L. C. STEPHENS' PATENT COMBINATION RULE.

Rules graduated in foreign measure to order. RIVERTON, CONN.

H. DURRIE & CO., New York Agents, who will supply the trade at factory prices.

BAILEY WRINGING MACHINE CO.,

No. 99 Chambers Street, New York.

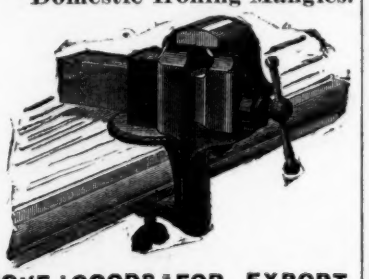


MANUFACTURERS OF

Novelty and Excelsior Clothes Wringers,
Defiance Metallic Planes,
Spoke Shaves, Try Squares, etc.,
Novelty Carpet Sweepers.

MANUFACTURERS' AGENTS FOR

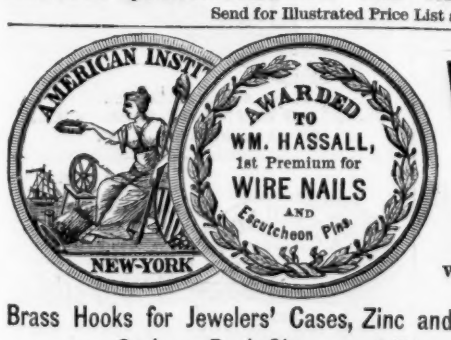
American Meat and Vegetable Choppers,
Silver's Stuffers and Presses,
Simpson's Quick-Adjusting Parallel Vises,
Novelty and Relief Washing Machines,
Domestic Ironing Mangles.



SPECIAL QUOTATIONS ON THE ABOVE GOODS FOR EXPORT.

Send for Illustrated Price List and Discount Sheet.

ESTABLISHED 1850.



WM. HASSALL,

Manufacturer of

American and French

Wire Nails

With Flat, Round, Oval, Depressed, Screw Fancy Heads, etc.

Brass Hooks for Jewelers' Cases, Zinc and Iron Hinges, Turn Buttons, Thumb Springs, Book Clasps, and Fancy Metal Work of all kinds.

OFFICE AND WORKS: *Nos. 63 & 65 Elizabeth Street, New York.*

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

We are prepared to furnish all kinds of

WROUGHT IRON BUTTS, both Common and Bright Finish.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

SABIN MFG. CO.,

MONTPELIER, VT., Manufacturers of

PATENT DOUBLE ACTING SPRING BUTTS,

Sabin's Lever Door Springs,

The BOSS and CROWN Door Springs,

For Screen and Light Inside Doors.

NATIONAL Horse Nail Co.

MANUFACTURERS OF

FINISHED

[BRIGHT OR BLUED]

These nails are made of the best brands of **NORWAY IRON,** and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,

VERGENNES, VT.

HORACE DURRIE & CO., Agents,
No. 97 Chambers St., New York

PUTNAM'S HOT FORGED & HAMMER POINTED Horse Shoe Nails.

TRADE MARK.

Made from the best of Norway Iron.

The only *hot forged* machine made Horse Shoe Nail in the world that is *not sheared or cut* on the point. Warranted *never to split* or *silver* in the driving, and to hold the shoe *longer* than any other Nail. For sale by the hardware and iron trade generally.

PUTNAM NAIL CO.,

P. O. Address, Neponset, Mass. **BOSTON.**

ANVIL NAIL CO.

We desire to call the attention of the trade to our new manufacture of

Steel Horse Shoe Nails,

made from metal prepared in the Martin-Siemens Furnace by our PATENT process, which produces a nail having all the requisites for a

PERFECT HORSE SHOE NAIL.

The well-known desirable properties of a perfect nail are, that the POINT should be sharp, the SHANK stiff, to drive without crippling under the hammer, SOFT enough to clinch readily, while sufficiently tough to avoid all danger from the "drawing the clinch" or breaking the neck under the head. These properties we claim for the

"ANVIL HORSE NAILS."

In the process of manufacture the metal is compressed under the head, which gives the nail great strength where it is required (between the shoe and hoof), and the cold rolling gives it a stiffness attained in no other way, while the quality of the metal used insures a clinch and point unsurpassed by any nail ever offered in the market.

Samples and prices sent on application.

ANVIL NAIL CO.,

65, 67 and 69 Washington St., New York.

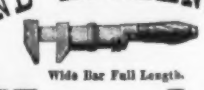
Established in 1839. Formerly L. & A. G. Coes.

L. COES & CO.

Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS


Wide Bar Full Length.


Wide Bar Full Length.

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle.

None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.

HORACE DURRIE & CO., Sole Agents.

These Axes Made from

HORACE DURRIE & CO.

Agents, - - New York.

Firth's Best English Cast Steel.

The 1878 Pennsylvania Lawn Mower.

LIGHT DRAFT AND EASILY ADJUSTED.

This machine presents all the advantages of a light and durable LAWN MOWER, and we believe has good qualities which cannot fail to be appreciated. It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competion with *any other machine* in the town in which they may reside.

☞ Every machine warranted to work as represented.

PRICE LIST.

Width of Cutter.	Description.	Price.
12 inch.	8 in. driving wheel, wt. 33½ lbs. Can be used by a lad..	each, $18.00
14 "	8 in driving wheel, wt. 34¾ lbs. Can be used by a lady..	" 20.00
16 "	8 in. driving wheel, wt. 36¾ lbs. One man size.....	" 22.00

GENERAL AGENTS:

LLOYD, SUPPLEE & WALTON, 625 Market St., Philadelphia.

HORACE DURRIE & CO., 97 Chambers & 81 Reade Sts., N. Y.

THE AMERICAN MACHINE COMPANY,

MANUFACTURERS OF

Hardware Specialties.

OFFICE AND FACTORY, - No. 1916—1924 N. 4th St., Philadelphia.

Is double acting, throws a continuous stream 40 feet. Useful for sprinkling lawns and roads, washing windows, extinguishing fires, &c. Very simple and durable, and easy to work. Price, complete, boxed, $7.00 each. Discount to trade.

L. M. RUMSEY & CO., Agents, St. Louis, Mo.

The Iron Age Directory

and Index to Advertisements.

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NICKEL PLATERS' SUPPLIES.

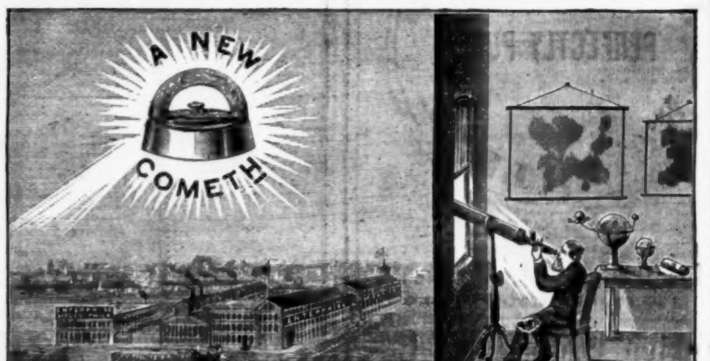
Estimates for Complete Outfits Furnished.

639 & 641 West 51st Street, New York.

ENTERPRISE Mfg. CO. of PA.

Patented Hardware Manufacturers and Iron Founders,

THIRD and DAUPHIN Sts., PHILADELPHIA.



SPECIALTIES.

Enterprise Patent Cold Handle Double Pointed
SMOOTHING AND POLISHING IRONS,
CHAMPION TOBACCO CUTTERS,
PATENT MEASURING FAUCETS,
SELF-WEIGHING CHEESE KNIVES,
&c., &c.

SPECIALTIES.

AMERICAN
COFFEE, SPICE AND DRUG MILLS
SAUSAGE STUFFERS,
FRUIT, LARD and JELLY PRESSES,
CHAMPION DRIED BEEF SHAVERS.
Coffee Roasters, Bung-Hole Borers,
&c., &c.

The Stamped Stove Pipe Elbow,

HOGEN'S PATENT.

The Stamped Elbow has neither Crimps, Cavities nor Angles which cause accumulations that rust or corrode the Iron.

OFFICE AND WORKS, Wason St. on Lake Shore, CLEVELAND, O.

New York Wholesale Prices, October 9, 1878.

HARDWARE.

Anvils.
American ... ℘ ℔ 10c—dis 20 %
Wright's ... ℘ ℔ gold 10¼c over 240 ℔s 10¾c, gold
Armitage's Mouse Hole ... gold 9¾ @ 10c
Trenton ... 10¾c currency
Eagle Anvils (American) ... ℘ ℔ 9c dis 20 %

Apple Parers, &c.
Turn Table ... ℘ doz $6.75, dis 10 %
Lightning ... ℘ doz 6.75, dis 10 %
Bay State ... ℘ doz 13.00, dis 10 %
Reading, '72 ... ℘ doz $6.00, dis 10&2 %
" '74 ... ℘ doz 7.00, dis 10&2 %
" '75 ... ℘ doz 8.00, dis 10&2 %
" '78 ... ℘ doz 8.75, dis 10&2 %
Climax Corer and Slicer ... ℘ doz 6.75, dis 10 %

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co / Kassor's Patent } dis 50 @ 55 %
Cook's, Douglass Mfg. Co ... dis 50&5 %
Cook's, Ives' ... dis 45&10 %
Snell Mfg. Co.'s C. S. Augers ... dis 50&10 %
" " B. Machine ... dis 50 %
" " C. S. Bits ... dis 40 %
" " Jenning's Bits ... dis 35 %
Jennings' Bits ... dis 10&10 %
Imitation Jenning's Bits ... dis 35 %
Ives' "Jennings" Bits ... dis 20&10 %
Lewis' Single Twist Bits ... dis 40 %
Andrews Bits ... dis 50 %
Griswold's Patent Bits ... dis 30 %
Expansive Bits, Clark's, small, $18; large, $26 .. dis 20 %
" " Ives ... $20 @ $30—dis 33⅓ %
" " Blake's ... $20—dis 40 %
" " Parmelee's ... $20 and $30 .. dis 33⅓ %
Hollow Augers Ives' / French, Swift & Co } dis 40 %
" " Bonney's Adjust., ℘ doz $48—dis 25&10 %
" " Stearns' Adjust., ℘ doz $48—dis 25&10 %
" " Ives' Expansive ... each $4.50—dis 40 %
" " Univ'sal Expansive, each $4.50—dis 20 %
Gimlet Bits ... $7.50 ℘ gross, dis 40 %
" Diamond ... ℘ doz $1.00 dis 33⅓ %
" "Bee" ... dis 25&10 %
Double Cut Gimlet Bits Shepardson's ... dis 40 %
" " Ct. Valley Mfg. Co ... dis 30&10 %
" " Hartwell's ... dis 60 %
" " Douglass' ... dis 40 %
" " Ives' ... dis 50&10 %
Morse's Bit Stock Drill, List of May 15, '78 ... dis 25 %
L'Hommedieu's Ship Augers ... dis 15 %
Watrous Ship Augers ... dis 15 %

Awl Hafts.
Sewing, Brass Ferrule ... $3.50 ℘ gross—dis 35&10 %
Peg, " ... 3.50 " dis 35&10 %
Patent Sewing, Short ... $1.00 ℘ doz—dis 35&10 %
" " Long ... $1.40 ℘ doz—dis 10 %
" Peg, Plain Top ... $10.00 ℘ gross—dis 35&10 %
" " Leather Top ... 12.00 " dis 35&10 %

Awls, Brad Sets, &c.
Awls Sewing, Common ... ℘ gross $1.35—dis 25 %
" Sewing, Best ... ℘ gross 1.40—dis 10 %
" Shouldered Peg ... ℘ gross 2.25—dis 15 %
" Patent Peg ... ℘ gross .60—dis 15 %
" Shouldered Brad ... ℘ gross $2.70—dis 25&10 %
" Handled Brad ... $8.00 ℘ gross—dis 25&10 %
" Handled Scratch ... $7.50 ℘ gross—dis 25&10 %
" Socket Scratch ... $1.00@$1.25 ℘ doz—net
Brad Sets, Aiken's ... ℘ doz $12.00—dis 40&10 %
No. 42, $10.50; No. 43, $12.50 ... dis 60 %
Stanley's Excelsior, No. 1, $11.00—dis 25&10 %

Axles.
Common (Guy C. Hotchkiss, Field & Co.) ... ℘ ℔ 3½c
Solid Collar, Case Hardened, Chilled Box ... ℘ ℔ 8c
Axle Grease.—Frazer's ... ℘ ℔ 6c

Balances.
All Spring Balances. List July 25 ... dis 25&10 %

Bells.
Hand Light Brass ... dis. 75 %
" Extra Heavy ... dis 40&5&10 %
" White Metal ... dis 60&5&10 %
" Silver Chime ... dis 20&10 %
" Swiss ... dis 25 %
" Globe (Cone's Patent) ... dis 25&10 %
Gong, Abbe's ... dis 20&10 %
" Yankee ... dis 35&10 %
" Barton's ... dis 40&2 %
Crank, Taylor's ... dis 25&10 %
" Brook's ... dis 50 %
" Cone's ... dis 10 %
" Connel's ... dis 50&10 %
Lever, Sargent's ... dis 65&10 %
" Taylor's Bronze or Plated Lever ... net
" " Japanned Lever ... dis 25&10 %
" Hart, Bliven & Mead Mfg. Co ... dis 50&10&2 %
Pull, " " " " ... dis 50&10&2 %
" Brock's ... dis 50 %
" Western ... dis 25&10 %
Call ... dis 20 %
Cow, Common Wrought ... dis 20&10 %
" Western ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Kentucky "Star" ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00	dis 50&10 %

" Yaw's Genuine ... dis 50 %
" Texas ... dis 40&10 %
" Wilson's Moore's) ... dis 50 %

Bellows.
Blacksmiths', Common ... dis 45 %
" Extra and Pittsburgh Pattern ... dis 20 %
Moulders' ... dis 25 %
Hand Bellows ... dis 20 %

Bit Holders.
Extension, Barber's ... ℘ doz $15.00—dis 40&5 %
" Ives' ... ℘ doz $15.00—dis 40 %
Diagonal ... ℘ doz $24.00—dis 40 %
Angular ... ℘ doz $24.00—dis 40 %
Blind Adjusters.—Domestic ... ℘ doz $3.00, dis 20 %
Blind Fasteners.—Mackrell's ... dis 30 %
Van Sand's ... No. 2000, $14.00, dis 40&7½ %
" old pattern ... ℘ gross, $10.50, dis 20&10 %
Washburn's Patent ... ℘ gross $14.00, dis 25 @ 30 %
Merriman's ... new list net
Blind Staples.
Boardman's Patent, ⅜ in. and larger ℘ ℔ 25c dis 10&2 %
" ¼ in ... ℘ ℔ 30c dis 10&2 %
Blocks.—Burr & Co ... dis 25 %
Differential Pulley Blocks ... dis 20 %
Penfield Block Works, Rope and Iron Strap'd .. dis 40 %
" " " Wrot. Iron Tarbox, Pat.
Com. Bushed ... dis 30 %
Penfield Block Works, All Steel Roller Bushed, dis 15 %

Bolts.
Cast Iron Barrel, Shutter, &c ... dis 65&10 %
Cast Iron Chain (Sargent's list) ... dis 65&10 %
Bush's Lever and Chain Bolts ... dis 40, 10&10 %
Wrought Iron Barrel ... dis 50, 10&10 %
" " Square ... dis 50, 10&10 %
" " Shutter (Stanley's list) ... dis 50 %
" " " (Sargent's list) ... dis 50, 10&10 %
" " Sunk Flush, Sargent's ... dis 50&10&10 %
" " " Stanley's ... dis 15&10 %
" " B.K.Flush, Comm'n, Stanley's . dis 30&10 %
" " " " Ex. Heavy ... dis 20&10 %
" " Plated Knob & Slide Flush " dis 10&10 %
Carriage and Tire, Common ... dis 75&3 % cash
" " Norway Iron ... dis 70 %
" " R. B. & W ... (old list) dis 70&5 %
" " Philadelphia ... dis 70 %
" Coleman ... dis 60&10 @ 60&20 %
" Shelton's ... (old list) dis 70&5 %
Tire. Am. Screw Co.'s, Phila ... dis 70&5 @ 70&10 %
" "Bay State" ... dis 75&10 @ 80 %
Star (Phila) ... dis 60&10@60&20 %
Union Nut Company ... dis 70 %
Stove—American Screw Co.'s ... dis 55&5 @ 60 %
" R. B. & W ... dis 50&10&5 %
" Union Nut Co ... dis 50 %
Plow ... dis 50 %
Machine ... dis 70&5 %
Bolt Ends ... dis 60
Borax ... 9@11c ℘ ℔ net

Boring Machines.

	Upright.	Angular.	
First quality, no Augers	$5.50	$7.50	dis 40&10 %
" with Augers	9.00	11.00	dis 40&10 %
Second quality, no Augers	2.35	5.00	net
" with Augers	4.00	4.65	net
Snell's, no Augers	4.75	6.25	dis 40 %
Phillips' with Augers	....	10.00	dis 35 %

Bow Pins.
Union Nut Co ... dis 60&10 %
Hotchkiss' ... low list dis 10 %
Humason, Beckley & Co.'s ... dis 60 %
Sargent & Co.'s ... $10.70 and $21.40, dis 60&10 %
Braces.—Barber's Patent ... dis 40&5 %
O. S. Backus ... dis 40&10 %
Wilson Mfg. Co ... dis 10 %
Spofford's Patent ... dis 50&5 %
Noble (Patent ... dis 40&5 %
Ives' "Centennial" ... dis 50 %
Common Ball (American) ... dis 25&10 %
Brackets.—Shelf (Sargent's) .. dis 60&10 @ 60&10&10 %
Swing (T. & S. Mfg. Co.) ... dis 33⅓ %
Bright Wire Goods ... dis 70&10 %
Bull Rings.—Union Nut Co ... dis 50&20 %
Sargent's ... dis 66⅔&10 %
Hotchkiss' ... low list dis 10 %
Humason, Beckley & Co.'s ... dis 60 %
Union Nut Co ... dis 60&10 %

Butts.
Wrought Brass ... dis 60 %
Cast Brass, Tiebout's ... dis 40 %
" Corbin's ... dis 50&10 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow ... dis 60&10 %
" Broad ... dis 65&10 %
Loose Joint, Narrow and Broad ... dis 70&10 %
Parliament Butts ... dis
Mayer's Hinges ... dis
DRILLED AND WIRED.
Fast Joint, Narrow ... dis
" Broad ... dis
" Broad, Japanned ... dis
Loose Joint ... / Japanned ... / " with Acorns ... } dis
Parliament Butts ... dis
Mayer's Hinges ... dis
Loose Pin no Acorn ... dis
" Acorns ... dis
" Japanned ... dis
" Plated Tips. dis

Union Mfg. Co.'s Fancy Butts—
Figured Enameled Loose Joint ... dis 65&10 %
Boston Finish, Plain ... dis 80&10 %
" " with Iron Acorns ... dis 75&10 %
" " with Silvered Acorns ... dis 70&10 %
WROUGHT IRON.
Fast Joint Narrow ... dis 40&10 %
Lt. Narrow ... dis 35&10 %
Broad ... dis 40&10 %
Loose Joint, Broad ... dis 40&10 %
Table Butts, Back Flaps &c ... dis 35&10 %
Inside Blind, Regular ... dis 35&10 %
" Light ... dis 40&10 %
Loose Pin, Wrt ... dis 50&10 %
Spring Hinges:
American Spiral Spring Butt Co., Jap'd ... dis 25 %
" " " " Fancy ... dis 10 %
Sabin Mfg. Co.'s Double Acting ... dis 35 %
Centennial, Japanned ... dis 25 %
" Ornamental ... dis 20 %
Union Spring Hinge Co.'s ... dis 25 %
American Spring Hinge Co.'s ... dis 25 %
Union Mfg. Co ... dis 25 %
Bommer's ... dis 25 %
Blind Butts, Parker ... dis 70&10 %
" Palmer ... dis 40&5&10 %
" Seymour ... dis 65&10&10 %
" Shepard ... dis 70&10 %
" Lull & Porter ... dis 66⅔&10 %
" Nicholson ... dis 45&10 %
" Huffer ... dis 40&10 %
" Clark's, Nos. 1, 3, 5, 40 and 45 ... dis 65&10 %
" Buffalo "Noiseless" ... dis 75 %
" Sargent's ... dis 70&10&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co ... dis 20 %
D. R. Barton Tool Co ... dis 20 %
Bradley's ... dis 25 %
Beatty's ... dis 25 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Hart Mfg. Co ... dis 50&10 %

0	1	2	3	4	5	6
$20.00	26.00	20.50	33.00	37.00	41.50	45.00

Can Openers.
Messenger's Comet ... ℘ doz $3.00, dis 20 %
American ... ℘ doz $2.25, dis 60 %
Lyman's ... ℘ doz $3.75, dis 20 %
Poole ... ℘ doz $3.75, dis 40 %
No. 4, French ... ℘ doz $2.25, dis 50 %
No. 5, Iron Handle ... ℘ doz $2.25, dis 60 %
Eureka ... ℘ doz $2.50, dis 10 %
Sardine Scissors ... ℘ doz $7.00, dis 45 %
Star ... ℘ doz $5.00, dis 25 %
Caps—Percussion, ℘ 1000.
Hicks & Goldmark's G. D. & S. R ... 35c
" " E. B. 1-10 Ground ... 70c, dis 6 %
" " E. B. 1-10 Turned ... 65c, dis 5 %
" " D. W. P. 1-10 ... $1.40, dis 5 %
" " D. W. P. ¼ ... 1.35, dis 5 %
" " Colt's 1-10 ... 70c, dis 5 %
Ely's E. B ... 1-10s, 65 @ 68c. gold
" Double Waterproof, 1-4s, $1.50; 1-10s, $1.58c, gold
Colt's ... 1-10s, 80c gold
Cartridges.—Metallic ... dis 60&7 %
Cards.—Horse and Curry ... dis 33⅓&10 %
Cotton ... dis 30 %
Wool ... dis 30 %
Carpet Stretchers.
Cast Steel, Polished ... ℘ doz $5.00, dis 30 %
" Iron, Steel Points ... ℘ doz $2.00, dis 45&5 %
Casters.
Bed ... dis 55 %
Plate and Shallow Socket ... dis 55 %
Deep Socket ... dis 40 %
Cattle Leaders.
Hotchkiss' Sons' ... dis 10&10 %
Humason, Beckley & Co.'s ... dis 60 %
Sargent's ... dis 60&10&10 %
Union Nut Co ... dis 60&10 %
Chain.
Trace, 6½-1-2 ... by the cask, ℘ pair 45 @ 46c
" 6½-10-3 ... by the cask, ℘ pair 43 @ 44c
" 7-10-2 ... by the cask, ℘ pair 49 @ 50c
German Halter Chain ... dis 30&5 % gold
" Coil ... dis 30&5 % gold
Galvanized Pump Chain ... ℘ ℔ 10½c dis 10 %
Jack Chain, Iron ... dis 60&10
" Brass ... dis 55&10 %
Chalk.
White ... ℘ gross 55c net
Red ... ℘ gross 75c net
Blue ... ℘ gross 90c net
White Crayons ... ℘ gross 13½c net
Chisels.
D. R. Barton Tool Co. (all kinds) ... dis 20 %
Socket Framing, Crossman ... dis 65&10 %
" " Buck Bros ... new list, dis 25 %
" " Hart Mfg. Co ... dis 65&5&10&2 %
" " Merrill ... dis 65&10 %
" " Witherby Tool Co ... dis 65&10 %
" " Douglass' ... dis 70 %
" Firmers, Crossman ... dis 60&7½&10 %
" " Buck Bros ... new list, dis 25 %
" " Hart Mfg. Co., extra .. dis 65&5&10&2 %
" " Merrill ... dis 70 %
" " Witherby Tool Co ... dis 70 %
" " Douglass' ... dis 70&5 %
" Corner ... dis 65@70 %
Tanged Firmers extra ... dis 40 %
" " Butcher's ... $5.00 @ $5.25 to £ gold
" " Newbould's ... 5.50 to £ gold
" " Spear & Jackson's ... 5.00 to £ gold
" " Buck Bros (Shank) ... 5.00 to £ gold
Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron ... dis 25 %
" Adjustable, Gray's ... dis 20 %
" " Lambert's ... dis 20 %
" " Snow's ... dis 40&5 %
" " Hammer's ... dis 15 %
" " Stearns' ... dis 15&10 %
" Cabinet, Sargent's ... dis 60&10&10 %
" Carriage Makers', Sargent's ... dis 60&10&10 %
" Cord and Tape (T. & S. Mfg. Co.) ... dis 30 %
Clips, Axle.
Norway or Best ... dis 60 %
Superior ... dis 60&10 %
Cockeyes.—1¼ in., 28c.; 1½ inch, 33c.; 1¾ in., 37c, net
Cocks, Brass.
Racking, new list ... dis 50 %
Globe, " ... dis 50 %
Plain Bibbs, " ... dis 50 %
Ale and Beer, new list ... dis 50 %
Coffee Mills.
Board and Box ... dis 20@25 %
Increase Wilson's ... net
Selsor's Pat ... $9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) ... dis 20 %
French Steel ... dis 20 %
The Swift (Lane Bros.) ... dis 25 %
Combined Dinner Pail and Lantern.
℘ doz $15.00 ... dis 30 %
Compasses, Dividers, &c.
Compasses ... dis 35&10 %
Callipers ... dis 45&10 %
Dividers ... dis 55 %
Bemis & Call Co.'s Dividers ... dis 60 %
Bemis & Call Co.'s Compasses & Callipers ... dis 45&5 %
Cook's ... dis 15 %
Excelsior ... dis 50 %
Miller's Patent ... dis 25 %
Coopers' Tools.
Bradley's ... dis 15 @ 20 %
D. R. Barton Tool Co ... dis 20 %
Corkscrews.—Humason & B ... dis 33⅓ %
Corn Knives and Cutters.—Bradley's ... dis 10 %
Crow Bars.
Cast Steel ... ℘ ℔ 9c net
Iron, Steel Points ... ℘ ℔ 5c
Crucibles.—Gautier & Co ... ℘ No. 5½c
Curling Irons, &c.
⅛, ⅜, ¾ in., $1.80, 2.00, 2.40 ... dis 10 %
Curling Tongs ... ℘ doz $4.25, dis 10 %
Pinching Irons ... ℘ doz 7.50, dis 20 %
Curry Combs.
Curry Comb Mfg. Co ... dis 25&10 %
Fitch's (List of No. 240, $1) ... dis 33⅓&10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list. dis 40&7½ %
Hotchkiss' Novelty ... dis 20&10 %
Rubber ... ℘ doz $9.00, dis 20&10 %
Curtain Pins.—Silvered Glass ... dis 15 %
White Enamel ... dis 15 %
Cutlery.
Meriden Cutlery Co. (Table) ... net
Am. Miller Bro.'s Cutlery Co ... dis 25 %
Humason & Beckley, Pocket ... dis 25 %
Naugatuck Cutlery Co ... list net
New York Knife Co. (Pocket) ... dis 35&5 % cash
" " (Table) ... net

Dog Collars.
Embossed Gilt ... dis 20 %
Leather ... dis 30 %
Brass ... dis 25 %
Door Springs.
Torrey's Rod ... ℘ doz $2.00, dis 5 @ 10 %
Gray's ... ℘ doz $1.65, net
Johnson's Rod ... ℘ doz 3.00, net
Gem (Coil)—
No. 1, Large, Japanned ... ℘ doz $3.50 / No. 2, Medium, " ... ℘ doz 2.50 / No. 3, Small, " ... ℘ doz 2.00 } dis 10 %

Challenge (Coil)— Nos.	9	7	6	
Japanned ... ℘ doz	$2.00	2.50	3.50	dis 30 %
Coppered ... ℘ doz	4.00	4.50	5.00	
Galvanized ... ℘ doz	3.50	4.00	4.50	
Nickeled ... ℘ doz	5.50	6.00	7.00	

Premium (Coil)— Nos.	1	2	3	
Japanned ... ℘ doz	$7.50	6.25	5.00	dis 30 %
Nickeled ... ℘ doz	11.00	9.50	8.00	

Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 4, ("Shoo Fly") Screen door size ℘ doz $1.80 / No. 5, Screen Door Size ... ℘ doz $2.00 / No. 6, Medium ... ℘ doz 2.50 / No. 7, Large ... ℘ doz 3.50 } dis 25 @ 30 %
Sabin's Lever .. No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss ... ℘ doz $4.20, dis 40&10 %
Philadelphia ... 5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed ... dis 20 %
Cowell's ... No. 1, $18.00; No. 2, $15.00 ℘ doz, dis 50 %
Rubber, complete ... ℘ doz $1.90, net
Drawing Knives.
Crossman's No. 1 ... dis 65&10 %
D. R. Barton Tool Co ... dis 20 %
Hart Mfg. Co., extra ... dis 65&5&10&2 %
Merrill ... dis 65&10 %
Nobles Mfg. Co ... dis 15 %
Bradley's ... dis 35 %
Adjustable Handle ... dis 20 %
Witherby Tool Co ... dis 65&10 %
Douglass ... dis 70 %
Drills and Drill Stocks.
Blacksmiths' ... each $2.15 net
" Self-Feeding ... each $7.50, dis 10 %
Breast, P. S. & W ... dis 25 %
" Hotchkiss ... dis 20 %
" Wilson's ... dis 20 %
" Miller's Falls ... each $2.50, dis 25 %
Ratchet, Merrill's ... dis 20 %
" Ingersoll's (old list) ... dis 35 %
" Whitney's ... dis 30 %
" Weston's ... dis 20 %
" Moore's Triple Action ... dis 20 @ 25 %
Whitney's Hand Drill ... dis 20&10 %
Wilson's Drill Stocks ... dis 10 %
Automatic Boring Tools ... each $2.75, dis 30 %
Drill Chucks.—Morse's Beach Patent ... dis 30 %
" Adjust. each $10.00, dis 30 %
Danbury ... $8.00, dis 30 %

Egg Beaters.
Dover ... ℘ doz $5.00, dis 20 %
Family ... ℘ doz $3.00 net
National ... ℘ doz $4.50, dis 33⅓ %
Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in., (Duc's Improved) ℘ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ℘ doz $5.60 @ $10.20, net
Storehouse, (Duc's Patent) 12 to 17, $12.00 @ $20.00 ... net
Emery and Emery Paper.
Genuine Chester—Regular Nos ... ℘ ℔ 6c
" " Flour and FF ... ℘ ℔ 5c
" " in 10-lb. cans ... 2c extra
Washington Mills—Regular Nos ... ℘ ℔ 8c
" Flour ... ℘ ℔ 5c
Wellington Mills, Grain ... ℘ ℔ 10c net
" " Flour ... ℘ ℔ 8c net
Hampden Emery Grain ... 5c net
" " Flour ... 3c net
B. & A. Emery Paper ... dis 15 @ 20 %
Enameled and Tinned Ware.
Kettles ... dis 45 %
Sauce Pans ... dis 35 %
Tinned Sauce Pans ... dis 35 %
Escutcheon Pins.
Iron ... dis 33⅓ %
Brass ... dis 33⅓ %
Escutcheons.
Door Lock ... Same discounts as Door Locks
Brass Thread ... dis 60&10 %
Wood ... dis 25 %

Faucets.
Fenn's ... dis 50 %
Fenn's Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 20&10 %
Wood and Metallic ... dis 40 %
West's Patent Key ... dis 40 %
Metallic Key. Leather Lined ... dis 20&10 %
Cork Lined ... dis 70&10 %
Enterprise (Self Measuring) ... ℘ doz, $36.00, dis 20 %
Felloe Plates ... ℘ ℔ 15c, dis 50 %
Files.
American File Co ... $5.00 to £ currency, dis 40&5 %
Auburn ... $5.00 to £ currency, dis 25 %
Arcade ... $5.00 to £ currency, dis 35 %
G. & H. Barnett ... dis 25 %
Nicholson ... (Nicholson List) dis 35 %
Heller & Bros ... $5.00 to £ currency, dis 20 %
Madden & Cockayne File Co ... $5.00 to £ cur., dis 25 %
Jowitt's ... $4.50 to £ gold
J. & Riley Carr ... 4.50 to £ gold
Stubs' ... $7.00 @ 7.50 to £ gold
Butcher's ... 4.50 to £ gold
Walter Spencer & Co.'s "Diamond" ... 4.50 to £ gold
Fisher's ... 4.75 to £ gold
Moss & Gamble ... 4.50 to £ gold
H. Disston & Sons (new list) ... dis 35 %
Limet & Co. (French) ... $4.25 to £ gold
Boynton's Cant ... dis 40 %
Fluting Machines.
Knox, 4-inch Rolls ... $2.10 each net
" 6 " " ... $2.50 each net
" 8 " " ... 4.40 each net
Peerless, 4-inch Rolls ... 4.00 each net
" 5 " " ... 4.75 each net
Eagle, 3½-inch Roll ... $30.00 ℘ doz, dis 45 %
" 5½ " " ... 40.00 ℘ doz, dis 45 %
Eureka, No. 1, 7-inch Roll ... 6.50 each, dis 33⅓ %
" No. 2, 5-inch Roll ... 5.50 each, dis 33⅓ %
Crown, 4½-in. Roll, $4; 6-in., $4.75; 8-in., $7.25 each, dis 45 %
Champion, 4-in., $2.15; 6-in., $2.50; 8-in., $4.00 each, net
Domestic Fluter ... 1.50 each net
Geneva Hand Fluter ... $15.00 ℘ doz, dis 10 %
Shepard Hand Fluter ... No. 75 ℘ doz $15, dis 10 %
Combined Fluter and Sad Iron ... ℘ doz 15.00, dis 10 %
Buffalo ... ℘ doz 10.00, dis 10 %
Fluting Scissors ... dis 45&10 %
Forges—Keystone Portable Forge Co ... dis 20 %
Forks.
Hay, Manure and Spading ... new list, dis 15 %
Plated "A 1, Rogers & Bro ... dis 40&5 % cash
" Reed & Barton ... dis 40&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co ... dis 20 %
Fry Pans.
Burnished, list as follows ... dis 60&5 %

No.	0	1	2	3	4	5	6	7	8
℘ doz	$5.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Acme Patent, same list as above ... dis 40&10 %

Gauges.
Marking, Stanley's ... dis 45&10 %
" Chapin's ... dis 50&10 %
" Star ... dis 35 %
Wire ... dis 10 %
" Smith's Patent ... ℘ doz $18.00, dis 40 %
Gimlets.
Nail and Spike ... dis 45 %
"Bee" Gimlets ... ℘ gross $12.00, dis 45 %
"Eureka" Gimlets ... dis 50 %
"Diamond" Gimlets ... dis 20&10 %
Double Cut, Shepardson's ... dis 40 %
" " Hartwell's ... dis 50 %
" " Ives' ... dis 40&10 %
" " Douglass' ... dis 40 %
Glue Pots.
Tinned and Enameled ... dis 40 %
Family, Howe's "Eureka" ... dis 30 %
" L. F. & C.'s "Handy" ... dis 25 %
Grindstone Fixtures.
Sargent's Patent ... dis 70&10&10 %
Reading Hardware Co ... dis 40&10&2 %
" " " "Keystone" ... dis 45&10&2 %
Hart Mfg. Co., Nos 9 to 11 ... dis 50&10 %

Hammers.
Maydole's (new list on A. E. Bell Face) ... dis 15 %
Cheney's Steel Face and Claw ... dis 10 %
" all Steel ... dis 20&10 %
Verree ... dis 5 %
Magnetic Tack ... dis 25&10 %
Warner & Noble's ... dis 10 %
Yerkes & Plumb's ... dis 30 %
Kip's (new list, Sept. '78) ... dis 33⅓ %
Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ℘ doz / " " Leg Irons, $25 ℘ doz } dis 10 %
Tower's ... dis 25 %
Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz	$0.80	1.00	1.18	1.35	1.50	dis 65&10 %

Roggin's Latches ... 33c net
Bronzed Iron Drop Latches ... ℘ doz $0.85 @ $1.00 net
Jap'd Store Door Handles—Nuts, $1.40; Plate $0.95
no Plate, 75c ... net
Barn Door ... per doz $5.00, dis 65&10&10 %
Wrought Chest ... dis 60&10 %
Surface Chest, Sargent's list ... dis 60&10&10 %
Flush Chest ... dis 60&10&10 %
Lifting ... dis 60&10 %
Saw and Plane ... dis 35&10 %
Boynton's X Cut (Loop) ... dis 20 %
" " (Centennial) ... dis 15 %
Hammer and Hatchet ... dis 20 %
Brad Awl ... ℘ gross $3.75, dis 25&10 %
Hickory Firmer Chisel, assorted, ℘ gross $5.25
" " " large, " 6.25
Apple " " assorted, " 6.00
" " " large, " 7.00
Socket " " assorted, " 3.50
" Framing " assorted, " 6.00
File, assorted, ℘ gross ... 3.50
Auger, assorted, ℘ gross ... 6.00
" large, " ... 7.00 } dis 20&10 %
Patent Auger, Ives' ... dis 25&10 %
" Douglass' ... ℘ set $1.25, dis 10 %
" Swan's ... ℘ set $1, dis 20&10 %
Hangers.—Anti-Friction ... dis 40&10 %
Barn Door ... dis 70&10 @ 75&10 %
Novelty ... dis 40 %
Challenge ... dis 50 %
Climax (Anti-Friction) ... dis 50 %
Sterling Improved (Anti-Friction) ... dis 70&10 %
Cheritree ... dis 20 %
Harness Snaps.
Henshaw's ... List of 1½ changed to $14.00, dis 50 %
Judd's ... " " " 14.00, dis 50&10 %
Fitch's (Bristol) " 14.00, dis 50 %
Hotchkiss' ... dis 10 %
Andrews' ... dis 50 %
Sargent's ... dis 60&10 %
New York Wire ... dis 20&20 %
"German" ... dis 65 @ 65&10 %
Hatchets.

Isaiah Blood ... dis 30 %						
Shingling,	Nos. 1 2 3	℘ doz	$7.25	$8.00	$8.75	
Claw,	Nos. 1 2 3	℘ doz	7.75	8.50	9.25	
Lathing,	Nos. 1 2 3	℘ doz	7.50	8.00	8.50	
Hunt's ... dis 25 %						
Shingling,	Nos. 1 2 3	℘ doz	$7.25	$8.00	$8.75	
Claw,	Nos. 1 2 3	℘ doz	7.75	8.50	9.25	
Lathing,	Nos. 1 2 3	℘ doz	7.50	8.25	9.00	
Hurd's ... dis 30&10 %						
Shingling,	Nos. 1 2 3	℘ doz	$8.00	$8.50	$9.00	
Claw,	Nos. 1 2 3	℘ doz	9.00	9.50	10.00	
Lathing,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00	
Simmon's ... dis 35 %						
Shingling,	Nos. 0 1 2 3	℘ doz	$7.50	$8.00	$8.50	$9.00
Claw,	Nos. 1 2 3	℘ doz		9.00	9.50	10.00
Lathing,	Nos. 1 2 3	℘ doz		8.00	8.50	9.00
Broad,	Nos. 1 2 3 4	℘ doz	9.00	10.00	12.00	14.00
"	Nos. 5 6 7 8	℘ doz	16.00	18.00	20.00	22.00
Collins' ... dis 10 %						
Shingling,	Nos. 1 2 3	℘ doz	$6.00	$6.50	$7.00	
Claw	Nos. 1 2 3	℘ doz	6.50	7.00	7.50	
Lathing,	Nos. 1 2 3	℘ doz	6.00	6.50	7.00	
D. R. Barton Tool Co. ... dis 20 %						
Shingling,	Nos. 1 2 3	℘ doz	$11.00	$10.50	$10.00	
Lath,	Nos. 1 2 3	℘ doz	10.50	10.00	9.50	
Half Hatchets.	Nos. 1 2 3	℘ doz	11.00	10.50	10.00	
M. H. Jones & Co. ... dis 40 %						
Shingling,	Nos. 1 2 3	℘ doz	$8.00	$8.50	$9.00	
Half Hatchets,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00	
Claw,	Nos. 1 2 3	℘ doz	9.00	9.50	10.00	
Lathing,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00	
Broad,	Nos. 2 3 4	℘ doz	11.00	13.00	14.50	
	Nos. 5 6 7	℘ doz	16.50	18.00	19.50	

Hay Knives.
"Lightning" ... ℘ doz $20.00 net
Wadsworth's ... dis 30 %
Hinges.
Gate, Western ... ℘ doz $6.25, dis 60&10 %
" N. E ... ℘ doz $10.13, dis 60&5&10 %
" N. E. Reversible ... ℘ doz $6.50, dis 60&10 %
Gate, Clark's No. 1 ... ℘ doz $6.00, dis 50 %
" N. Y. State ... ℘ doz $7.20, dis 60&10 %
" Automatic ... ℘ doz $12.50 dis 40 %
" Common Sense ... dis 20 %
" Seymour's ... dis 40&10 %
" Shepard's ... No. 25 ℘ doz $6.00, dis 50 %
Rolled Blind Hinges ... dis 60&10 %
Rolled Plate ... dis 70&10 %
Rolled Raised ... dis 70&10 %
Wrought Strap and T, list Dec. 20, '77 ... dis 60&10 %
Plate Hinges "Providence" { 6 to 10 in. 5½c ℘ ℔ / over 10 in. 4½c ℘ ℔ } ... dis 10 %
Screw Hook and Strap { 8, 10, 12 in., 11c / 14 to 36 in., 9½c } dis 50&10 %
Heavy Welded Hook { 8 to 12 in., 11c / 14 in. & up, 9½c } dis 30 %
Screw Hook and Eye { ⅞ & 1 in., 10c / ¾ in. 12c / ⅝ in. 14c / ½ in. 16c } dis 35 %
Hoes.—Solid Shank, C. S ... ℘ doz $5.25, dis 15 %
Socket ... ℘ doz 5.75, dis 15 %
Riveted Shank ... ℘ doz 3.25 dis 15 %
Grub ... dis 30 %
Planters' ... dis 30 @ 35 %
Scovill Pattern ... dis 25 @ 30 %
Scovill Pattern, Handled ... dis 25 %
Hick's Pat. Solid C. S. Planters' ... dis 20&10 @ 30 %
" " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters ... dis 25@30 %
" " Scovill Pattern ... dis 20@25 %
Hooks.
Bird Cage, Sargent's list ... dis 60&10&10 %
Cotton ... dis 50 %
Cotton (Humason & Beckley Mfg. Co.) ... dis 25 %
Belt, (new list) ℘ c ... dis 30&10 %
Bench—Hotchkiss' $5.00 ℘ doz ... dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ℘ doz dis 25 %
" McGill's, $3.00 ℘ doz ... dis 10 %
" Skinner's, $6.25 per doz ... dis 20 %
Clothes Line, Hart's list ... dis 60&10&5&10 %
" Sargent's list ... dis 66⅔&10 %
" Reading list ... dis 45&10&2 %
Ceiling .. Harness. { Hart's list ... dis 70&10 % / Sargent's list ... dis 70&10 % / Reading list ... dis 45&10&2 % }
Coat and Hat, Hart's list ... dis 65&5&10 %
" Sargent's list ... dis 66⅔&10 %
" Reading ... dis 45&5&10&2 %
" T. & S. Mfg. Co's list ... dis 25 %
Tassel (T. & S. Mfg. Co.) ... dis 40 %
Wrought Staples and Hooks and Staples, dis 75 @ 75&10 %
" Staples, Stanley's list ... dis 40 %
Wire Screw Hooks and Eyes ... dis 70&10 %
Grass and Bush ... dis 40 %
Whiffletree—Patent ... dis 40 %
Hooks and Eyes—Malleable Iron ... dis 60&10&10 %
" " Brass ... dis 60&10&10 %

Horse Nails

Nos.	5	6	7	8	9	10	
Ausable ... ℘ ℔	30c	27c	25c	24c	23c	22c	dis 20 %
" Finished, Polished or Blued ... "	31c	28c	26c	25c	24c	23c	
Bridgewater Iron Co. Pointed and Polished	26c	23c	21c	20c	19c	18c	
Cortland	29c	26c	24c	23c	22c	21c	dis 15 @ 25 %
" P't'd & Blued	31c	28c	26c	25c	24c	23c	
Globe (New list) / H. P. Pointed and Finished	26	23	21	20	19	18c	dis 20 %
North Western Finf'h'd	26	23	21	20	19	18c	net
" " Plain	25	22	20	19	18	17c	net
National, Pointed and Polished, Pat. Fin.		25	23	22	21	20c	net
Putnam Hammer, P't'd	26	23	21	20	19	18c	net
Vulcan P't'd & Blued	26	23	21	20	19	18c	net

Horse Shoes.—Burden ... ℘ keg $3.62½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy ... ℘ keg 3.62½
Mule Shoes ... ℘ keg 4.62½
Perkins' Snow ... ℘ keg 4.12½

Ice Awls, Chisels, &c.
American Ice Chisel ... ℘ doz $6.00 dis 45 %
National " ... ℘ doz $6.25, dis 20 %
Novelty Ice Breakers ... ℘ doz $6.25 dis 40 %
White's Sliding Head Picks ... ℘ doz $4.50 dis 20 %
Dunlap's Ring Picks ... ℘ doz $3.00, dis 25 %
Wood Head Picks, Sargent's ... ℘ doz $1.85, dis 60&10 %
Iron " ... ℘ doz 1.85, dis 60&10 %
Ice Mallets Pickin Head ... ℘ doz $1.75 net
" Pick in Handle ... ℘ doz 3.00 net
Ice Axes, Small Cast or Malleable ... ℘ doz 1.25 net
Kitchen Ice Tongs ... ℘ doz 2.25 net
Combination Ice Tools ... ℘ doz $2.50, dis 30&10 %

Kettles.
Brass, 7 to 13 inches inclusive ... ℘ ℔ 35c net
Brass, larger than 13 inches ... ℘ ℔ 40c net
Enameled ... dis 45 %
Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe ... dis 15 %
" Bread ... ℘ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives ... dis 20 %
Hay and Straw—"Wadsworth's" ... dis 30 %
Table and Pocket ... See Cutlery
Knobs.
Carriage (Jap'd 80c. ℘ gross) ... dis 60&10 %
Base—Common ... dis 30&10 %
" Plush Tip ... dis 10 %
" Elastic End. No. 8 ... dis 70 %
Door, Mineral / " Por. Jap'd / " " Plated / " " Por. } Same discounts as Door Locks.
Furniture, Plain ... 75c gross inch, dis 10 %
" Wood Screws ... dis 20 %
Picture (T. & S. Mfg. Co.) ... dis 50 %
" Sargent's ... dis 60&10 %
Shutter, Porcelain ... dis 60 %

Ladles.
Melting—Hart's ... dis 55&10 %
" Sargent's ... dis 50&10 %
" Reading ... dis 15&10 %
" Monroe's Patent ... ℘ doz $4.00, dis 20 %
Lanterns.
Tubular ... No. 0, $10.00; No. 1, $11.50; With Guards, 50c extra. } net
Hurricane ... dis 25 %
Peerless ... No 5, ℘ doz $11.75, dis 10&10 %
Brady's Patent ... dis 10&10 %
Ætna ... dis 10&10 %
Yankee ... dis 10&10 %
De Beque ... dis 10&10 %
Police ... Small, $7.50; Med., $9.00; Large, $12.00, dis 20 %
Convex Reflector ... $3.60 ℘ doz, dis 10 %
Lemon Squeezers.
Porcelain Lined ... ℘ doz $4.00 net
Eureka, Tinned ... ℘ doz $10.00, dis 10 %
Dunlap's Improved ... ℘ doz $4.00 net
Sammis' ... No. 1, $7.50; No. 2, $12.00 ℘ doz., dis 25&10 %
Townsend's Patent ... $6.00 ℘ doz., dis 33⅓ %
Lines.—Linen Fish ... dis 25 %
Cotton Chalk ... dis 50 %
Sil. Lake Chalk ... Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50 ... dis 20 %
Mason's Linen ... dis 20 %
Wire Clothes, Galvanized ... each 33 @ 43c net
Locks and Latches.
Cabinet—Gaylord / " Eagle } ... dis 25&2 %
" Barnes & Deitz ... dis 30 %
" Bridgeport Lock Co ... dis 25&2 %
Trunk ... dis 25 %
Langstroth & Crane's List Jan. 1, '77.
Round Key ... dis 40&10 %
Flat Key ... dis 33⅓&10 %
Barnes & Deitz, Flat Key ... dis 30 %
Yale Lock Co., Flat Key ... dis 40 %
Shepardson's, Flat Key ... dis 35 %
American Lock Mfg. Co ... dis 33⅓ %
Plate ... dis 33⅓&5&2 %
F. Many's "Extension Cylinder" ... $10.50 ℘ doz, net
DOOR LOCKS, &C.
Branford ... dis 60&10&2 %
Norwalk ... dis 50&10&2 %
Norwich ... dis 50&10&2 %
Russell & Erwin ... dis 70&10&2 %
Mallory, Wheeler & Co ... dis 35&10&2 %
Reading Hardware Co ... dis 35&10&2 %
Trenton ... dis 40&5&2 %
Continental ... dis 33⅓ %
Padlocks—Russell & Erwin / Mallory, Wheeler & Co / Wm. Wilcox & Co } ... dis 33⅓&5 % and 2 % for cash
" American Lock Mfg. Co ... dis 33⅓ %
" Romer's ... dis 20 %
" Conestoga ... dis 60 %
" J. H. McWilliams ... dis 10 %
" Barnes & Dietz ... dis 30 %
" Penn Lock Works ... dis 30 %

Mallets.—Hickory and Lignumvitæ ... dis 10&10 %
Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
℘ doz. $14.00 17.00 19.00 30.00—dis 25
Miles' Challenge ... Nos. 1 2 3
℘ doz. $22.00 30.00 40.00—dis 30 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each ... $3.00 4.00 5.00 11.00 13.00 30.00—dis 40 %
Woodruff's (P. S. & W.) ... Nos. 100 140
℘ doz .. $15.00 18.00—dis 40.
Hales' ... Nos. 11 12 13
℘ doz .. $33.00 40.00 51.00—dis 50&2 %
Draw Cut ... Nos. 5 2 6 8 10
Each .. $50.00 75.00 80.00 225.00 400.00—dis 20 %
American ... dis 25 %
Nos ... 1 2 3 4 B 5
Each ... $5.00 7.00 10.00 25.00 50.00 60.00
Molasses Gates.
Stebbins Pattern ... dis 62½&10 %
" Genuine ... dis 60&10 %
" Tinned Ends ... dis 40&10 %
Chase's Hard Metal ... dis 30 %
Bush's ... dis 20 %
Lincoln's Genuine ... dis 62½&10 %
Weed's ... dis 15 %

Nails ... See Trade Report
Nuts and Washers.
Square Nuts ... 7c off list
Hexagon Nuts ... 8c off list
Washers ... 7c off list
Nut Crackers
Table (Humason & Beckley Mfg. Co.) ... dis 33⅓ %
Blake's Pattern ... ℘ doz $2.25, dis 10 %

Oakum.
Best ... ℘ ℔ 9½c
U. S. Navy ... ℘ ℔ 8½c
Navy ... ℘ ℔ 7c
Oilers.—Zinc and Tin ... dis 55 %
Brass and Copper ... dis 50 %
Olmsted's ... dis 40 %
Broughton's ... dis 40 %
Malleable (Hammer's) ... ℘ doz $5.00, dis 10 %
Prior's Patent or "Paragon" ... dis 50&10 %
Ox Balls ... dis 60&10 %

Pencils.
Faber's Carpenters' ... dis 10 %
" Round Gilt ... ℘ gross $5.25 net
Dixon's Lead ... ℘ gross 4.00 net
" Lumber ... ℘ gross 7.50 net
Picture Nails and Knobs.
Brass Head, Sargent's List ... dis 50&10&10 %
" T. & S. Mfg. Co ... dis 50 %
Porcelain Head, Sargent's List ... dis 50&10&10 %
" " Judd's List ... dis 40 %
Porcelain Head, T. & S. Mfg. Co ... dis 40 %
Pinking Irons ... ℘ doz 75c, net
Plaiting Machines.
Magic ... ℘ doz $10.00, net
Astor Plaiting Machine ... each $15.00, dis 20 %
Crown Plaiting Machines ... dis %
6in., $6.00. 10in., $10.00, each.
Planes and Plane Irons.
Bench, First Quality ... dis 35&10 %
" Second " ... dis 50&10 %
Moulding ... dis 35&10 %
Bailey's Patent Adjustable, new list Jan. '77, dis 25&10 %
Bailey's "Victor" " " dis 25&10 %
Defiance Adjustable, new list ... dis 25&10 %
D. R. Barton Tool Co ... dis 20 %
Plane Irons, Butcher's ... $5.50 to £ gold
" Buck Bros ... $5.00 to £ gold
" Auburn Tool Co.'s ... dis 25 %
" Defiance ... dis 25&10 %
" D. R. Barton Tool Co ... dis 20 %
" Middletown Tool Co ... dis 10 %
" Ohio Tool Co ... dis 10 %
" Spear & Jackson's ... $5.00 to £ gold
" Sandusky Tool Co ... dis 10&10 %
Pliers and Nippers.
Button's Patent ... dis 33⅓ %
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ℘ doz, dis 25 %
Humason & Beckley Mfg. Co ... dis 33⅓ %
Gas Pliers ... dis 30&10 %
Eureka Pliers and Nippers ... dis 25 %
Russell's Parallel ... dis 25 %
P. S. & W. Cast Steel ... dis 35 %
" " End Cutting Nippers ... dis 25 %
" " Tinners' Cutting Nippers ... dis 20 %
Plumbs and Levels.
Disston's ... dis 70 %
Stanley R. & L. Co.'s Pat. Adjustable ... dis 60&10 %
" " " Non-Adjustable ... dis 60&10 %
Chapin's Patent Adjustable ... dis 60&10 %
" Non-Adjustable ... dis 65&10 %
Standard Rule Co.'s New Adjustable ... dis 60&10 %
" " Non-Adjustable ... dis 60&10 %
Johnson's Patent Adjustable ... dis 60&10 %
Davis' Patent ... dis 60&10 %
Pocket Levels ... dis 60&10 %
Post Hole and Tree Augers.
Samson Post Hole Digger ... per doz $36.00, dis 20 %
Fletcher Post Hole Augers ... ℘ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz ... dis 20 %
Leed's ... $5.00 each, dis 45 %
Potato Parers, &c.
Bay State ... ℘ doz $13.00 dis 10 %
Saratoga "Peeler and Slicer ... ℘ doz 7.75 dis 10 %
Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $18.00, dis 20 %
" Pruning Hook ... " 11.50, dis 20 %
Pruning Shears ... ℘ doz $4.50 @ $5.00 net
Pulleys.
Judd's Axle ... ℘ doz $0.50, dis 40 %
Hot House and Tackle ... dis 66⅔&10 %
Jap'd Screw ... dis 66⅔&10 %
Brass Screw ... dis 60&10 %
Jap'd Side ... dis 66⅔&10 %
" Clothes Line ... dis 66⅔&10 %
Hay Fork Solid Eye, $4.50; Swivel, $5.00, dis 10&10&10 %
" " "Anti-Friction," ... $7.50 dis 20 %
" " "F" Common and Pat. Bushed ... dis 20 %
" " Tarbox Pat. Iron ... dis 30 %
Shade Rack ... dis 50 %
Punches.
Belt or Drive ... ℘ doz $2.00; 2.25; 2.50, dis 40 %
Spring ... ℘ doz $7.00, dis 40&5 %
" Leach's Patent ... dis 15 %
" Bemis' ... dis 20&10 %
Solid, Tinners' ... ℘ doz $1.44, dis 30 %

Rail.
Sliding Door, Wrought Brass ... ℘ ℔ 40c dis 10 %
" Iron, Painted .. ℘ foot 9c, dis 55&10 %
Barn Door, ⅛, ⅜ and ¼ inch ... dis 75&10 %
" for N. E. Hangers ... dis 70&10 %
Rakes.
Cast Steel ... dis 15 %

8	10	12	14	16 teeth.
$5.00	5.75	6.50	7.25	8.00

Malleable ... dis 15 %

10	12	14 teeth.
$3.60	4.00	4.40

Razor Straps.
Genuine Emerson ... dis 30@33⅓ %
Badger's Emerson ... dis 33⅓ %
Badger's (not Emerson) ... dis 25 %
Evans' ... dis 40 %
Imitation Emerson ... ℘ doz $2.75 dis 40&10 %
Hunt's ... dis 40&5 %
Chapman ... dis 10 @ 15 %
Torrey's ... dis 20 %
Saunder's ... dis 10 @ 15 %
Rivets.
Iron and Tinned ... dis 50 %
In bulk, new list of Jan. 10, 1878 ... dis 40 %
Copper Rivets and Burs ... dis 25 %

Nos.	7	8	9	10	11	12	13	14	15
℘ ℔	49c	50c	52c	54c	56c	58c	60c	64c	70c

Tinned Iron Belt Rivets and Burs ... dis 40 %
Rivet Sets ... dis 40 %
Rods.
Stair ... dis 50&10 %
" American Patent ... dis 33⅓ %
Rollers.
Barn Door, Sargent's list ... dis 70&5&10 %
Novelty ... dis 10 %
Acme (Anti-Friction) ... dis 40 %
Rope. Manufacturers' Net List, September, 1878
Manila ... ½ inch and larger ℘ ℔ 11¼c
" ... ⅜ inch ℘ ℔ 11¾c
" ... ¼ and 5-16 inch ℘ ℔ 12¼c
" Tar'd Rope ... ℘ ℔ 10½c
" Lath Yarn ... ℘ ℔ 12¼c
" Hay Rope ... ℘ ℔ 11¼c
Sisal ... ½ inch and larger ℘ ℔ 9¼c
" ... ⅜ inch ℘ ℔ 9¾c
" ... ¼ and 5-16 inch ℘ ℔ 10¼c
" Hay Rope ... ℘ ℔ 9¼c
Rules.

	Boxwood	Ivory.
Chapin's / Stanley / Standard / Willis, Thrall & Son	dis 60, 10&10 %	dis 55@55&10 %
Stephens	dis 70&10 %	55@55&10 %

Sad Irons.
From 4 to 10 lbs ... ℘ ℔ 2¼@2½c net
Self-Heating ... ℘ doz $8.75 net
" Tailors' ... ℘ doz $17.50 net
Gleason's Shield and Toilet ... dis 25 %
Enterprise Patent Cold Handle ... dis 33⅓ %
Mrs. Pott's Pat. Cold Handle, "Crown" ... dis 33⅓ %
Combined Fluter and Sad Iron .. per doz $15.00, dis 15 %
Sand Paper.
Baeder & Adamson's Flint, 00 to 1½ .. $4.25 ℘ ream
" " " 2, 2½ & 3. 4.75 ℘ ream
" " " Assorted 4.25 ℘ ream
" " Star ... 3.25 ℘ ream
" " Emery .. ℘ ream $6.50 @ 11.50 } dis 15@20 %
New England, same list as B. & A. Flint ... dis 15@20 %
Gage's ... dis 20&5 %
Sash Cord.
Common ... ℘ ℔ 16 @ 15c net
Patent ... ℘ ℔ 18c net
Silver Lake Russia Flax ... ℘ ℔ 55c net
" White Cotton ... ℘ ℔ 55c net
" Drab Cotton ... ℘ ℔ 60c net
Raw Hide ... dis 25 %
Steel Ribbon ... dis 10 %
Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross ... dis 40@45 %
Ferguson's ... dis 33⅓ %
Walker's ... dis 10 %
Hammond's Window Springs ... dis 25 %
Northup Window Springs ... $9.00 per gross, dis 10 %
"The Perfect," Plain Jap'd ... ℘ gross $10.00 net
" Por. Knob Jap'd ... ℘ gross 14.00 net
" Nickel-Plated ... ℘ gross 27.00 net
Sash Weights.—Solid Eyes ... ℘ ℔ 1 @ 1¼c
Sausage Stuffers or Fillers.
Miles ... ℘ doz $20, dis 30 %
Perry ... ℘ doz, No. 1, $15; No. 0, $21, dis 40 %
Draw Cut No. 4 ... each $30.00, dis 20 %
Enterprise Mfg. Co ... dis 20 %
Silver's ... dis 25 %
Saws.
Disston's Circular ... dis 30 %
" Mill ... dis 30 %
" Cross Cut ... dis 20 %
" Hand, Panel, Rip, &c ... dis 20 %
H. W. Peace's Circulars ... dis 25 %
" Mill, Gang and Mulay ... dis 25 %
" Cross Cut, Wood, Hand, &c ... dis 20 %
E. M. Boynton's Lightning, Cross Cuts ... dis 50&5 %
" One-Man, all lengths ... dis 40&5 %
" Buck Saws (X Bar) .. ℘ doz $15, dis 40&10 %
" Billet Webs ... ℘ doz $10, dis 40&5 %
" Pruning ... dis 40 %
Wheeler & Clemson Mfg. Co.'s Hand ... dis 20 %
" " Cross-Cut ... dis 35 %
Livingston's Butcher and Kitchen ... dis 20 %
Framed Wood—

Nos.	101	102	103	104	105	
Per doz.	$10.00	8.50	10.00	7.50	6.25	net

Saw Frames.
White, Vermont ... ℘ doz $1.35, dis 15 %
Red, Polished and Varnished ... ℘ doz $2.00, dis 15 %
Saw Rods ... $10 list dis, 10&10 %
Saw Sets.
Boynton's Patent ... dis 40 %
Stillman's Genuine ... ℘ doz $4.35 net
" Imitation ... ℘ doz $3.25, dis 25 %
Common Lever ... per doz $2.00, dis 25 %
Leach's ... No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's ... No. 1, $3.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss ... $5.50, dis 20 %
" Bemis & Call Co.'s New Pat ... dis

Bemis & Call Co.'s New Pat. Lever....dis 20&10 %
Aiken's Genuine....$13.00, dis 40&10 %
" Imitation....$7.00, dis 40 %
Hart's Patent Lever....dis 20 %
Disston's....dis 20 %

Scales.
Hatch, Counter....℘ doz $36, dis 40&2 %
" Tea....℘ doz $15.00 dis 40&10&5 %
Union Platform....$6.00, dis 50 %
Turnbull's....dis 20 @ 25 %
Brown's....dis 25&5 %
Fairbanks'....dis 20&5 %
Howe's....dis 20&5 %
Chatillon's Grocers'....dis 25 %
" Eureka....dis 20 %
Universal Family....dis 25%
Favorite Family....dis 25 %
Scale Beams, Chatillon's list....dis 25 %
" Sargent's list....dis 60&10 %

Scrapers.
Box, 1 Handle....℘ doz $5.00, dis 10 %
" 2 " ....℘ doz 6.00 dis 10 %
Defiance Box and Ship....dis 25&10 %
Foot....dis 60&10 %
Ship (common)....per doz $3.00 net
" (Providence Tool Co....dis 10 %

Screw Drivers.
Hart, Bliven & Mead, new list....dis 45&10 %
Douglass Mfg. Co....dis 35&10 %
Disston's....dis 50 %
Disston's Patent Excelsior....dis 60 %
Buck Bros....dis 25 %
Stanley Rule & Level Co., Black Handle....dis 35&10 %
" " " Varnished H'le....dis 45&10 %
Sargent & Co.'s....dis 60&10 %

Screws.
Flat H'd Iron....dis 60&10 @ 70 %
Round Head Iron....dis 60 %
Flat Head Brass....dis 55 %
Round Head Brass....dis 40 %
Brass and Silver Capped....dis 40 %
Japanned List of Plain Screws....dis 45 %
Lag or Common Coach....dis 70&5 %
Coach Patent Gimlet Point....dis 40 @ 45 %
Bed....dis 10 %
Machine, Flat Head, Iron, Am. Screw Co....dis 25 %
" Round Head, Iron, " ....dis 20 %
Bench, Iron....dis 60&10 %
" Wood, Beach....℘ doz $3.00, net
" " Hickory....dis 20&10 %
Hand....dis 25&10 %
Hand Rail, Sargent's....dis 60&10 %
" " Humason, Beckley & Co.'s....dis 40&10 %
Jack Bell Bottom....dis 20 %
Jack (Wilson's)....dis 30 %
Sash (T. & S. Mfg. Co.)....dis 25 %

Shears and Scissors.
Cast Steel....dis 80 %
" Iron, "American"....dis 50 @ 55 %
Seymour's Straight Trimmers....dis 65 %
" Scissors....dis 65 %
Pruning....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers....℘ doz $3.75
Tinners'....dis 20 %
Heinisch Trimmers and Scissors....dis 60 %
" R. H. S. " " ....dis 65 %

Sheaves.
Sliding Door, M. W. & Co., list....dis 35&10&2 %
" R. & E. list....dis 50&2 %
" Patent Roller....dis 25&2 %
" " " Hatfield's....dis 50&2 %
" Russell's Anti-Friction....dis 50&2 %
" Moore's Anti-Friction....dis 45 %
Sliding Shutter, R. & E. list....dis 50&2 %
" " Sargent's list....dis 25&10 %
Moore's Anti-Friction....dis 45 %
Philadelphia, Hanging....dis 40&5&2 %

Shovels and Spades.
Ames....dis 32½ %
" not stamped "Ames"....dis 32½ %
Rowland's....dis 50 %
Kimball Shovel Co....dis 20 @ 20&5 %
Old Colony....dis 30 %
Middleboro' Shovel Co....dis 30 %
Remington's (Lowman's Patent)....dis 30 %
Dunning's Shovels and Scoops....dis 30&7½ %
B. Rowland & Co., Anchor Brand....dis 25 %
" " Patent....dis 40&5 %
Oxford Patent....dis 40&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list....dis 50&2 %
" " Hart's....dis 50&10&2 %
Polished Steel....dis 50&2 %

Slates.
Square Frames, Round Cornered, by case....dis 70 %
Less than a case....dis 65&10 %

Spoke Shaves.
Defiance Metallic....new list, dis 25&10 %
Iron....dis 40&10 %
Wood....dis 30 %
Bailey's....dis 25&10 %

Spoke Trimmers.
Bonney's....℘ doz $10.00, dis 40 %
Stearn's....℘ doz $10.00, dis 40 %
Ives'....No. 1, $15.00; No. 2, $12.00 ℘ doz, dis 40&10 %
Douglass'....℘ doz $9.00, dis 20&10 %

Spoons.
Tinned Iron....dis 15 %
Basting....dis 30 %
Britannia....dis 60 %
Derby Silver Co....dis 40&5&5 %
L Boardman's Sons, A1....dis 40&5&5 %
Rogers & Bro., A 1....dis 40&5 % cash
Reed & Barton....dis 40&5 %
Hall & Elton....dis 40&5 %
Holmes, Booth & Haydens....dis 40&5 %
German Silver....dis 30&5 %
Diamond Steel (L. Boardman's Sons)....dis 30&5 %
Tin (P. S. & W.), Teas....$1.50 ℘ gross, net
" " Tables....$2.50 ℘ gross, net
Tin Cowles Hdw. Co.)....dis 10 %
" " " case lots....dis 20 %

Stocks and Dies.
"Lightning" Screw Plate....dis. 10 %

Stone.
Hindostan Stone....℘ ℔ 6c } dis 30&10 %
" Ax Stone....℘ ℔ 8c
" Slips....℘ ℔ 10c
Sand Stone....℘ ℔ 6c, dis 30&10 %
Washita Stone....No 1, ℘ ℔ 22½c } dis 10 %
" ....No 2, ℘ ℔ 16½c
" Slips....No. 1, ℘ ℔ 45c
Arkansas Stone....No. 1, ℘ ℔ $1.15
" ....No. 1, ℘ ℔ $0.85
" Slips....No. 1, ℘ ℔ $2.25
Turkey Oil Stone....4 to 8in, $1.00 ℘ ℔, dis 10 %
" Slips....$2.50 ℘ ℔, dis 10 %
Grindstones, Family, Loring's....dis 10 %

Stove Polish.
Joseph Dixon's....℘ gross $6.00, dis 5 %
Gem....℘ gross $4.50, dis 5 %
Ruby....℘ gross $3.75, net
Gold Medal....℘ gross $6.00, dis 25 %
Rising Sun....℘ gross $5.75, net

Squares.
Steel....dis 50 %; full cases, dis 50&10 % } 2 % cash
Iron....dis 50 %; full cases, dis 50&10 %
Nickel Plated....add $2.50 @ $4.00 ℘ doz, net
Try Squares and T Bevels....dis 45&10 %
Star Try Squares and Bevels....dis 35 %
Disston's Try Squares and T Bevels....dis 50 %
Winterbottom's Try and Mitre....dis 20&10 %
Bailey's Try Squares and T Bevels....dis 25&10 %

Tacks, Brads, &c.
List of May, 1878....dis 55 %
Shoe Nails, (new list)....dis 10 %
Double-Pointed Tacks....dis 40&5 %

Tap Borers.
Common and Ring....dis 20&10 %
Ives' Tap Borers....dis 10&10 %
Enterprise Mfg. Co....dis 20 %

Tapes, Measuring.
American....dis 25 %
Spring Tapes....dis 25&10 %

Thermometers.
Tin Case....dis 60&10&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)....dis 20 %
Wood Bottom....℘ doz $12.00, dis 30&10 %
All Iron....℘ doz $10.50, dis 40&5 %
Nashua Lock Co.'s....℘ doz $18.00, dis 50 %

Toe Calks.—Winsted....℘ ℔ 10c. dis 10 %

Tinners' Tools and Machines.
Machines (P. S. & W.)....dis 5&10 %
Tools (P. S. & W.)....dis 15&20 %

Traps.
Game, Newhouse....dis 33⅓ %
" Newhouse Pattern....dis 60&10 %
" Blake's Patent....dis 40&10 %
Mouse, Wood, Choker....℘ doz holes, 13½c
" Patent Choker (Union Nut Co)....℘ doz holes, 16 @ 18c, net
" Round Wire....℘ doz $1.50, dis 10 %
" Cage....℘ doz $2.50, dis 10 %
" Patent Self Setting....℘ doz holes, 25c, net
" Catch-em-alive....℘ doz $2.75, dis 10 %
Rat, "Decoy"....per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering....dis 10 %
Reed's Brick and Plastering....dis 15 %
Disston's Brick and Plastering....dis 20 %
Peace's Plastering....dis 20 %
Clement & Maynard's....dis 20 %
Rose's Brick....dis 15 %
Brades' Brick....gold, dis 20 %
Worrall's Brick and Plastering....dis 20 %
Garden....dis 50 %

Triers.
Butter and Cheese....dis 25 %

Vises.
Solid Box, Trenton....40 to 160 lbs.. 13½c, dis 10 %
" Wilsons....32 to 160 lbs., 10c, net
" "Crown" (A. H. Hildicks) 40 to 100 lbs., 15c currency, dis 20 %
" Peter Wrights....15½c, gold
Parallel, Parker's....dis 20 %
" Wilson's....dis 45 @ 50 %
" Howard's....dis 25 %
" Sargent's....dis 60&10 %
" Trenton....dis 25 %
" Backus and Union....dis 25 %
" Fisher & Norris....dis 15&10 %
" Stevens'....dis 25 %
" Simpson's Adjustable....dis 25 %
"Family," List....net
Saw Filers, Bonney's....℘ doz $24.00, dis 20&10 %
" Stearn's....dis 20&10 %
" Hopkins'....℘ doz $17.50 dis 10 %
Lowell Hand Vises....dis 20 %
Richardson's Vise and Anvil....dis 25 %

Ventilators.
Protective (upper) per foot, $1.00 } dis 25 %
" (lower) " 1.50

Washer Cutters.
Smith's Patent....℘ doz $12.00 dis 10 %
Johnson's....℘ doz $12.00. dis 20&10 %
Penny's....℘ doz $14.00 and $16.00. dis 35&10 %
Appleton's....℘ doz $8.00, dis 10&10 %
Washers.—See Nuts and Washers.

Weather Strips.
Protective Ventilator Co.'s....dis 25 %
Well Wheels.—Revised list....dis 60&10 %

Wire.
Brass and Copper....List of July 1, 1878 dis 10 %
Bright and Annealed....Nos. 0 @ 18. dis 52½ @ 55 %
" " ....Nos. 19 @ 26, dis 57½ @ 60 %
" " ....Nos. 27 @ 36, dis 62½ @ 65 %
Coppered....Nos. 0 @ 18, dis 47½ @ 50 %
Galvanized, Nos. 0 to 6....℘ ℔ 10c, dis 30 @ 35 %
" Nos. 7 to 18....market list, dis 30 @ 35 %
Tinned, Nos. 0 to 18....dis 40 @ 42½ %
Cast Steel....dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25....dis 47½ @ 50 %
Annealed Fence, Nos. 8 and 9....dis 55 @ 57½ %
" Grape, Nos. 10 to 14....dis 55 @ 57½ %
Galvanized Telegraph, Nos. 7 to 9....℘ ℔ 8½c
" Nos. 10 and 11....℘ ℔ 9½c
" No. 12....℘ ℔ 10c
Fence Staples....℘ ℔ 7 @ 7½c
" Staples, Galvanized....℘ ℔ 9½ @ 10c
Stubs Steel Wire....$7.00 to £ gold
Japanned Barb Fence....℘ ℔ 15c
Galvanized " ....℘ ℔ 16c
Steel Music Wire, Nos. 12 to 27....℘ ℔ $1.00, net
Judd's Picture Wire....dis 80&20 %
Clothes Line Wire, Galvanized....℘ coil 43 @ 43c net

Wrenches.
American Adjustable....dis 45 %
Baxter's Adjustable "S,"....dis 20 %
" Diagonal....dis 20 %
Collins & Co.'s....dis 45 %
Coes' Genuine....dis 55 @ 60 %
" Pattern (Wrought)....dis 70 %
" " (Malleable)....dis 75&10 %
Girard....dis 50&10&10 %
Lindsay's " ....dis 25 %
Taft's Pattern....dis 75&10 %
Davis' Patent Duplex....new list, dis 25 %
Bemis & Call's Patent Combination....dis 25 %
" " Merrick's Pattern....dis 25&2½&20 %
" " Briggs' Pattern....dis 25&10 %
" " Cylinder or Gas Pipe....dis 25&30 %
Aiken Pocket (Bright)....$8.00, dis 55&10 %
The Favorite Pocket (bright)....per doz $8, dis 60 %

Wringers.

	Per doz.
Universal, Cog Wheels, No. 2½	$60.00
" " " No. 2	63.00
" " " No. 1½	71.00
Crown No. 2	54.00
" No. 2½	63.00
" No. 3	69.00
Eureka, No. 1	57.00
Novelty, No. 10, with Cog Wheels	60.00
" No. 2, " "	63.00
Excelsior, No. A, with Folding Bench	84.00
" No. E, for Set Tubs	66.00
Keystone No. 1, Wood Frame, no Gear	54.00
" No. 2, Iron " "	54.00
" No. 10, Wood " Common Gear	60.00
Peerless, No. 2	63.00
" No. 3	71.00
" No. 2½	60.00

Stamped Tinware.
Common Stamped Ware, L. & G. List, April, 1878, dis 50&10 %
Stamped Deep and Retinned Ware, L. & G. List, April, 1878....dis 50&10 %

METALS.

IRON.—DUTY: Bars, 1 to 1½c. ℘ ℔; Sheet, Band Hoop and Scroll, 1¼ to 1½c. ℘ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ℘ ton; Polished Sheet, 3c. ℘ ℔; Wrought Scrap, $8 ℘ ton; Cast Scrap, $6 per ton. Railroad 70c. ℘ 100 ℔s. Boiler and Plate, 1½c. ℘ ℔.

Pig Iron—AMERICAN.
Foundry No. 1....℘ ton $16.50 @ 17.50
" No. 2....℘ ton 15.50 @ 16.50
Gray Forge....℘ ton 14.50 @ 15.50

SCOTCH.
Glengarnock....℘ ton 22.75
Eglinton....℘ ton 21.75
Coltness....℘ ton 23.00

Rails.
Iron, at mill....℘ ton $32.00 @ 36.00
Steel, " ....℘ ton 42.00 @ 44.00
Old Rails....℘ ton 17.00 @ 18.00

Scrap.
Wrought Scrap, from yard..℘ ton, nom. 20.00 @ 21.00

Bar Iron, from Store.
Common Iron:
¾ to 2 in. round and square / 1 to 6 in. x ⅜ to 1 in. } ℘ ℔ 1 75c
Refined Iron:
¾ to 2 in. round and square / 1 to 6 in. x ⅜ to 1 in. } ℘ ℔ 2.0c
1 to 6 in. x ¼ and 5-16....℘ ℔ 2.2c
Rods—⅝ and 11-16 round and square....℘ ℔ 2.1c
Bands—1 to 6x3-16 to No. 12....℘ ℔ 2.4c
Swedish Iron:
Ordinary sizes....5c

Sheet Iron.

	Common American.	R. G. American.
Nos. 10 to 20	℘ ℔ 2⅞c	4
21 to 24	℘ ℔ 3 c	4
25 to 26	℘ ℔ 3⅛c	4¼
27	℘ ℔ 3¼c	4¼
28	℘ ℔ 3⅜c	4½c

Galvanized,	R. B.	2d qual.
14 to 20,	℘ ℔ 6¾c;	℘ ℔ 5½c
21 to 24,	℘ ℔ 7¼c;	℘ ℔ 6 c
25 to 26,	℘ ℔ 7⅝c;	℘ ℔ 6½c
27	℘ ℔ 8¼c;	℘ ℔ 7 c
28	℘ ℔ 9 c;	℘ ℔ 7½c

Patent Planished....℘ ℔ A, 10½c; B, 9½c
Russia, Nos. 8 to 16....℘ ℔ 11¼ @ 11½c
American Cold Rolled....℘ ℔ 4½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper, 4c ℘ ℔; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.
American Ingot....℘ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers' Copper, ordinary sizes, over 16 oz., ℘ sq. ft....℘ ℔ 25c
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ℘ sq. ft....℘ ℔ 27c
Braziers Copper, 10 oz and 12 oz., ℘ sq. ft....℘ ℔ 29c
" Lighter than 10 oz. ℘ sq. ft....℘ ℔ 31c
Circles less than 84 in. in diameter....℘ ℔ 28c
Circles 84 in. diameter and over....℘ ℔ 31c
Segment and Pattern Sheets....℘ ℔ 28c
Locomotive Fire Box Sheets....℘ ℔ 26c
Sheathing Copper, over 12 oz. ℘ sq. ft....℘ ℔ 23c
Bolt Copper....℘ ℔ 25c
Copper Bottoms....℘ ℔ 25c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.
14x48, by the case....℘ sheet 6c
14x48, less than case....℘ sheet 8c
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier..℘ ℔ 34c By the case. ℘ ℔ 33c
12 oz. and lighter....℘ ℔ 37c " " ℘ ℔ 36c

Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ℘ ℔ 36c By the case. ℘ ℔ 35c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier....℘ ℔ 38c
12 oz....℘ ℔ 41c

Brass.
Brown & Sharp's Gauge the Standard for Meta; Old English Gauge the Standard for Wire.
BRASS MANUFACTURERS' PRICE LIST.—dis 10 %.
July 1, 1878.
Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ℘ ℔.

HIGH BRASS.
All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in....25c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive....30c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive....33c
½c. ℘ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at...48c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 32c
Printers' Rules....40c
Sheets wider than 30 in. and under 40 in....42c
" " 40 in. and over....45c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 34c
" " over 14 " 20, " ..40c
" " " 20 " 30, " ..44c
" " " 30 " 40, " ..50c
" " " 40 in....54c

LOW BRASS.
4c ℘ ℔ more than High Brass.
Gilding Metal, 8c ℘ ℔ more than High Brass.
Platers' or Gold Metal { In Bars....43c; Sawed....46c; Planed or Polished....49c

FOR SLITTING.
Metal in width 2 in. to ½ in. to No. 28, inclusive, 1c. ℘ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ℘ ℔ advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c ℘ ℔ advance.
Metal, in width ½ in. to ¼, inclusive, not thinner than No. 28, 2c. ℘ ℔ advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 5c. ℘ ℔ advance.
Metal, ¼ in. in width and less, 10c. ℘ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ℘ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 " " "	.56	.76
10 " " "	.64	.88
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12 in. wide and weighing more than 10 ℔s., $2.00 ℘ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ℘ ℔ on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ℘ ℔ additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.28	$0.32	$0.38
No. 21	.31	.35	.41
No. 22	.32	.36	.42
No. 23	.33	.37	.43
No. 24	.35	.39	.45
No. 25	.38	.42	.48
No. 26	.40	.44	.50
No. 27	.43	.47	.53
No. 28	.47	.51	.58
No. 29	.50	.54	.61
No. 30	.53	.57	.67
No. 31	.57	.61	.73
No. 32	.61	.66	.79
No. 33	.65	.69	.88
No. 34	.69	.73	.98

Spring Wire 2c ℘ ℔ advance.
Flat, Square and Half Round Wire 5c ℘ ℔ advance on Round Wire.
Fancy Wire not less than 10c ℘ ℔ advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet lengths, 33c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 38c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.
Common Plain Brass Pail Ears....$0.36
Brass Door Rail....38

SCRAP.—net.
High Brass Scrap....11c
Low " 13c
Gilding....15c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 % ℘ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in....$0.38
" above 3 in....48
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch....65
" 3-16 " 1.05
" ⅛ " 1.55
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20....45c
English, Scotch and Extra Patterns Fancy Tubing to No. 20....50
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.
Plain....22
Fancy....28
Scotch and Extra Patterns....31

GERMAN SILVER TUBING.—dis 10 %
4 Per cent....75
6 " 85
9 " 1.00
12 " 1.15
15 " 1.20
16 " 1.35
18 " 1.45
20 " 1.55

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents ℘ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ℘ ℔; over 11, 3½ cents ℘ ℔, and 10 % ad val. Railway Bars, 1¼ cents ℘ ℔. Railway Bars, in part Steel, 1 cent ℘ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool....15c
Spring....7c
Homogeneous....12½c
Boiler Plate....8c
Tire....5½c
Machinery (round and square)....9c
File....9c
Sheet....11 @ 16c
Saw Plate, mill and mulay....14 @ 16½c
" gang and X cut....13 @ 14c
" circular as to size....18 @ 30c

Chrome Steel.
Tool....℘ ℔ 14 @ 15c
Tool, extra fine....℘ ℔ 40 @ 75c
Spring....℘ ℔ 8 @ 9c
Machinery....℘ ℔ 8 @ 10c
Gun or Homogeneous....℘ ℔ 12 @ 16c

English Steel.—Payable in gold, net.
" Best Cast....℘ ℔ 15½c
" Extra Cast....℘ ℔ 16½c
" Round Machinery, Cast....℘ ℔ 10c
" Swaged, Cast....℘ ℔ 18c
" Best Double Shear....℘ ℔ 15½c
" Blister, 1st quality....℘ ℔ 13c
German Steel, Best....℘ ℔ 11c
" 2d quality....℘ ℔ 10c
" 3d quality....℘ ℔ 9c
Sheet Cast Steel, 1st quality....℘ ℔ 15½c
" " 2d quality....℘ ℔ 14½c
" " 3d quality....℘ ℔ 12½c

ANTIMONY....18 to 13½c

LEAD.—DUTY: Pig $2 ℘ 100 ℔s; old Lead, 1½c ℔ ℘ Pipe and Sheet, 2½c ℘ ℔.
American....3¾ @ 4 c
Bar....5c. dis 10 %
Pipe....4¾c. dis 10 %
Tin Lined Pipe....12c, dis 10 %
Sheet....5½c, dis 10 %
Shot....Drop 6½ Buck, 7½c, dis 10 %

BABBITT METAL.
N. P. U....℘ ℔ 6 @ 7c
A 20c: B, 16c: C, 12c: D, 10c ℘ ℔.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ℘ ℔; Electro-galvanized Plates, 2c ℘ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.
Banca....℘ ℔ 18½
Straits....℘ ℔ 15 @ 16 currency
English....℘ ℔ 15 @ 16 currency

TIN PLATES, CURRENCY PRICES
I C 10x14 / 12x12 / 14x20 } Prime Charcoal....$6.00 @ 6.25
I X 10x14 / 12x12 / 14x20 } Prime Charcoal....8.00 @ 8.25
D C 12½x17 " ....5.50 @ 5.75
D X 12½x17 " ....7.50 @ 7.75
For each additional X add....2.00

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14 / I C 12x12 / I C 14x20	$5.75	5.50	5.00 @ 5.25

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$5.75	5.50	5.00 @ 5.25
I X 14x20	@ 7.75	....	....
I C 20x28	11.75	11.25 @ 11.50	10.25 @ 10.75
I X 20x28	@ 16.00	....	....
I C 20x200	@ 19.00	....	....
I C 14x20 M. F. Brand			$7.25 ....

SOLDER....No. 1, 9 @ 10c No. 2, 8½ @ 9c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 ℘ 100 ℔s.
American, cash....5¼ @ 5½c
Bergen Port from Lehigh Ore....9c, gold
Lehigh, on spot....10c

ZINC.—DUTY: Pig or Block, 1.50 ℘ 100 ℔s. Sheet, 2½c ℘ ℔.
Sheet, Cask....6c
" Open....6½c

Paper Stock, Old Metals, &c
(Dealer's Selling Price.)

Canvas linen....4 @ 4¼
" cotton, No. 1....4 @
" " No 2.... @ 2
White linen rags, No. 1....4 @
" " No. 2....2½ @
Seconds....1½ @ 1¾
Mixed woolens....2½ @ 3¼
Soft woolens....8½ @
Gunny bagging....3⅜ @
Jute Butts....3 @ 3⅛
Kentucky bagging....5 @
Waste paper and scraps.... @ ⅜
Rope cuttings....1½ @ 3
Kentucky bale rope....4 @ 4½
Oakum junk, No. 1....5¼ @ 5¾
" No. 2.... @ 4
Grass rope.... @ 2⅜
Tarred shaking....2 @
White collar cuttings, all paper....7 @
" " " muslin lined....5 @
" " Envelope....7 @
Hard White Shavings, No. 1....4 @
Soft " " No. 1....3½ @
White Shavings, No. 2....3¼ @
Mixed Shavings, part white....2¼ @
Imperfections, No. 2, best folded sheets....3¼ @
" No. 1, Heavy Stock....3½ @
Book Stock.... @ 3¼
" Heavy....3 @
" " Light....1⅜ @
Newspaper Stock....1⅜ @ 2
Prints....1½ @ 2
Pure Manilas....2⅜ @ 2⅞
Bogus Manilas and Hardwares....1 @
Commons....½ @
Binders' Board Cuttings....1 @ 1¼
Straw Board Cuttings....¾ @
Woolen Tailor Clips....13 @ 14
Satinet " ....2 @ 2½

Old Metal.
Copper, heavy....15 @
Copper Bottoms.... 12½
Yellow Metal....13 @
Brass, light....8 @
" heavy....10½ @
Heavy Composition....12½ @
Old Lead, solid.... @ 3¼
Tea Lead.... @ 2¾
Zinc.... @ 3¼
Pewter, No 1....10 @
" No. 2....8 @
Wrought Iron....per ton $17.00
Machinery Iron....per ton 13.00
Light Iron....per ton 9.00
Stove Plate....per ton 9.00
Grate Bars....per ton 4.00

Paints, Oils, &c.
Paints.
Black Lamp, Coach Painters....℘ ℔ 20c
" " Ordinary....6c
" Ivory Drop, fair....12 @ 15c
" " best....23c
Black Paint, in oil....kegs, 8c asst'd cans, 11c
Blue, Prussian, fair to best....40 @ 55c
" " " in oil....45 @ 60c
Blue Chinese dry....83c
" Ultramarine....18 @ 30c
Brown, Spanish....1½c
" Van Dyke....10 @ 12c
Carmine, 40....combination price
Green, Chrome....15 @ 23c
" " in oil....14 @ 18 @ 25c
" Paris....good, 25c; best, 30c
" " in oil....." 30c; " 45c
Iron Paint, Bright Red....℘ ℔ 2¼c
" Red....℘ ℔ 2c
" Brown....℘ ℔ 1½c
" Purple....℘ ℔ 3c
" Ground in Oil, Bright Red....℘ ℔ 5½c
" " " Red....℘ ℔ 5c
" " " Brown....℘ ℔ 4½c
" " " Purple....℘ ℔ 6c
Mineral Paints....1¼ @ 4c
Orange Mineral....12c
Red Lead, American....7½c
" " English....9½c gold
" Venetian (N. C.) dry....$1.70 @ $1.75
" " in oil....asst'd cans, 11c; kegs, 8c
" Indian dry....9 @ 12c
Rose Pink....10 @ 13c
Sienna, American, Raw....4c
" Burnt....4½c
" " in oil....10 @ 16 @ 20c
" Raw " ....11 @ 15 @ 25c
Umber, Burnt....4 @ 8c
" " in oil....9 @ 12 @ 16c
" Raw....3½ @ 7½c
" " in oil....10 @ 16 @ 18c
Vermillion, Chinese....90c, gold
" English....60c, gold
" Trieste....1.10, gold
" American, Common....18c
White Lead, American, pure dry....8c
" " " in oil....8c
White, Paris, English, prime....in bbls. 2 @ 2½c
Yellow Ochre, French....$1.75
" " " in oil....asst'd cans, 11c; kegs, 8c
" " Vermont....in casks 1½c
Yellow Chrome....17 @ 27c
" " in oil....14 @ 18 @ 25c
Zinc White, American No. 1, dry....8½c
" " No. 1, in oil....11c
" French (Paris)....11c
" " in oil....10½ @ 11½c

Oils.
Linseed, Raw, in casks and bbls....℘ gal. 60c & 62c
" Boiled. " " ....65c & 67c
Bleached Whale....℘ gal. 55c
" Sperm....℘ gal. $1.07
Prime Lard....56c
No. 1 " 52c
West Virginia....20c @ 30c
Empire Cylinder....64c
Fish Oil, pressed....35c
Neatsfoot....70c
Tallow....65c
Machinery....40c
Engine....50c

Sundries.
Asphaltum....9c
Benzine....℘ gal. 60
Chalk....¾c
" Block....¾c
Dryer, Patent, Am'n....ass't cans, 10½c; keg, 9c
Frostings....50c
Glue, White....33 @ 45c
" Sheet....20c
Glaziers' Points, Zinc....20
Gum, Copal....36c
" Damar....25c
" Shellac, English....30c
" " dark....25c
Litharge, English....9c gold
Mineral Wool....℘ ℔ 1¼ @ 1½c
Pumice Stone, selected Lumps....4 @ 6c
" powdered....2½c
Putty, in bladders....2½c
" in bulk....2c
Rotten Stone, soft, English....8c
Spirits Turpentine....38c
Whiting Spanish....¾c

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FRENCH WINDOW GLASS.
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Single Thick.—discount 60&5 %

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$7.50	$6.75	$6.25	$5.75
11 x 14 to 16 x 24	8.50	7.75	7.25	6.50
13 x 22 to 20 x 30	10.75	9.75	8.75	[illegible]
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 37 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Thick.—Discount 60&15 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$9.[illegible]
11 x 14 to 16 x 24	13.75	12.50	11.75	10.[illegible]
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	16.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

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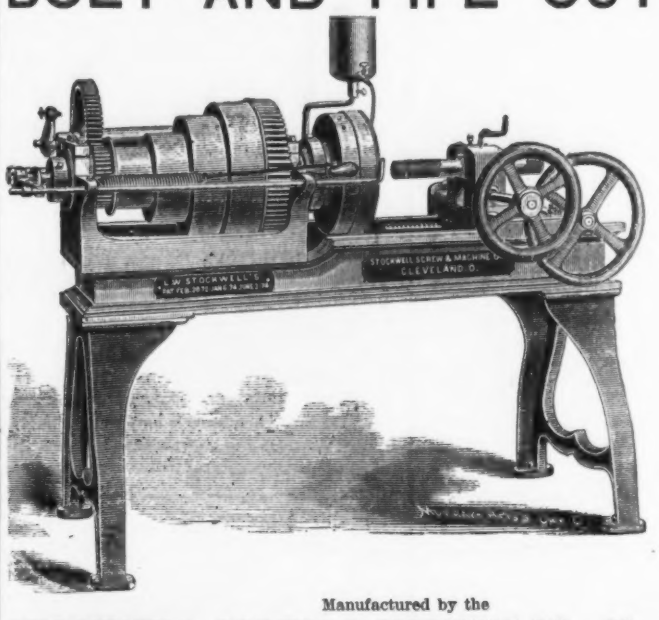

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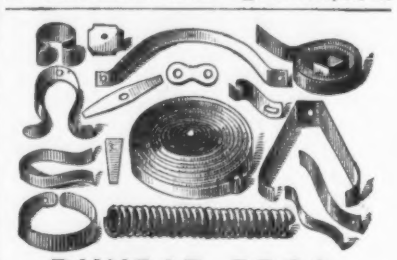

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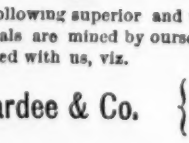
OIL  STONE

Of all description.

107th Street and Harlem River,

Send for Illustrated Price List. **NEW YORK**

"Bridgewater Iron Co.'s Horse Nails."

LIST PRICE, Pointed and Polished.

No.	5	6	7	8	9	10
	26c.	23c.	21c.	20c.	19c.	18c. per lb.

Full Assortment of above always on hand

AND FOR SALE BY

THE PARKER MILLS,
N. STETSON JR., Agent,

73 Pearl St., New York.

Coal.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.
303 Walnut St.,

PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well known Lehigh Coals are mined by ourselves and drms connected with us, viz.

A. Pardee & Co. { HAZLETON, CRANBERRY, SUGAR LOAF.

Pardee, Bro. & Co LATTIMER.

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. Mt. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other COALS.

Retail Yard on D. L. & W. Railroad, cor. Grove and 19th Sts., Jersey City. Coal delivered direct from Shutes to Carts and Wagons. Families and manufactories supplied with the best qualities of Coal at the lowest rates

OFFICES At Yard cor. Grove and 19th Sts.; cor. Bay St. and Newark Ave., Jersey City; Room 33, 11 Broadway, N. Y. General Office, Bank Building, cor Newark and Hudson Sts., Hoboken. P. O. Box 24, Hoboken.

The Patent Combined

Dinner-Pail
AND

Lantern.

The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.

Manufactured by JOS. HAIGHT, PORT CHESTER, N. Y.

Agents Wanted.

GRAHAM & HAINES,

O. Box 1040. **113 Chambers and 95 Reade Streets, New York.**

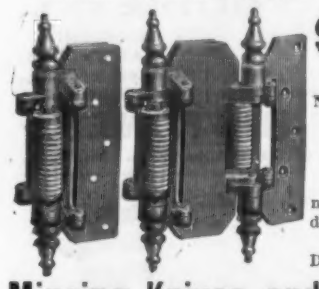
HARDWARE MANUFACTURERS' AGENTS, as follows:

Lawrence Curry Comb Co., Curry Combs.
Howard Bros. & Co., Cotton, Wool and Curry Cards.
Thompson, Derby & Co., Scythe Snaths.
Otsego Fork Mills, Steel Forks, Rakes, Hoes, &c.
H. Knickerbacker, Scythes, Axes and Tools.
H. W. Kipp, Nail Hammers.
Kloman, Park & Co., Vises, Picks, Mattocks, Grub Hoes, &c.
Jacobus & Nimick Mfg. Co., Locks, &c.
Sandusky Tool Co., Planes and Plane Irons.
Geo M. Eddy & Co., Measuring Tapes.
Wheeling Hinge Co., Hinges and Wrought Butts.
Northwestern Horse Nail Co. Horse Nails.
A. G. Coes & Co., Coes' Genuine Screw Wrenches.
F. K. Silby, Emery Cloth.
Holroyd & Co., Stocks & Dies.
Sedgwick Mfg. Co., Butter and Flour Triers, etc.
Ripley Mfg. Co., Mouse Traps.
Sam'l Loring, Plymouth Tack & Rivet Works.
Carr, Crawley & Devlin, Miscellaneous Hardware & Cast Butts.
J. Mallinson, Cast Steel Shears and Scissors.
Ketchem's Pat. Metallic Sleeves.
W. D. Turner & Co., Geneva Hand Fluters.
D. B. Niles & Son, Hand and Sleigh Bells.
C. S. Osborne & Co., Compasses, Calipers, Dividers, &c.
C. W. Maguire, Brushes.
Clark Bros. & Co., Carriage Bolts, &c.
Lowerre & Tucker, the Genuine Knox Fluting Machine.
T. B. Barclay, "Dodge's" Kentucky Cow Bells.
Lane Bros., Swift's and Grocers' Coffee Mills and Measuring Faucets, &c.
T. C. Richards Hardware Co. Bright Wire Goods, Picture Nails, &c.

The Cowles Hardware Co.,

UNIONVILLE, CONN., Manufacturers of

HARDWARE AND HOUSE FURNISHING GOODS.



SPRING BUTTS

FOR ALL SIZES OF DOORS, on a

New Principle, which **places the power just where it is most needed,** viz.,

They exert their greatest force at closing point.

Act with less resistance the wider the door is opened. Will not allow the door to open off from the top. Will retain the door back of a right angle.

Butts of our make can be seen at the principal Hardware Dealers in most of the larger cities of the States and Canada.

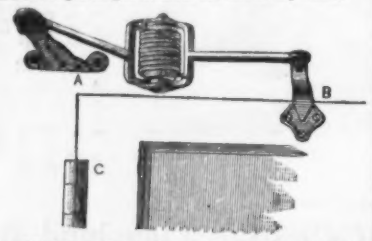
Mincing Knives and Screw Drivers of all varieties.

HERCULES

Reverse Action Door Spring and Retainer.

(Patented March 4, 1873.)

On an entirely new principle, distinct from all others. Holds the door open as well as shut, and allows the door to stand at a right angle without the aid of any catch.

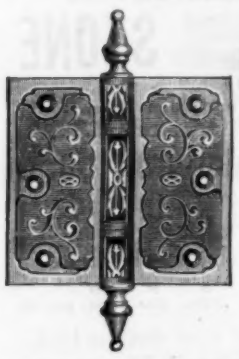


AGENTS: *COULTER, FLAGLER & CO., 87 Chambers St., New York; SAM'L G. B. COOK & CO., Baltimore, Md.; BAILEY & RICHARDSON, St. Louis, Mo.*

Send for circulars and discounts.

CLARK & CO.,

MANUFACTURERS OF



BUILDERS' HARDWARE.

426 & 428 Niagara Street,
BUFFALO, N. Y.
TENNIS & WILSON, Agents,
81 Beekman St., New York.

Send for Catalogue and Price List.

PEERLESS WRINGER CO.

New York Office: 106 Chambers Street. **THE** **Factory:** Cincinnati, O.

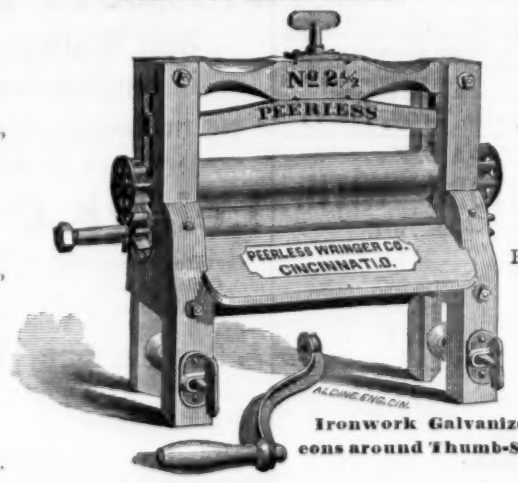
New and Improved Peerless Wringer,

Which, in addition to the Highest Possible Finish, combines the following

POINTS OF EXCELLENCE:

Solid White Rubber Rolls, Metal Journal Boxes, Patent Crank Fastening, Rubber Fastening Pads, Maple Frames.

Strongest Frame Made.



Wrought Iron Thumbscrews, Apron or Clothes Guide, Hickory Spring Bar, Moulded Rubber Springs. Best and Most Simple Tub Attachment.

Ironwork Galvanized. Escutcheons around Thumb-Screws.

Nothing can get out of order and be broken. Warranted double the capacity of any Purchase Gear Wringer.

GIVE US A TRIAL ORDER.

Mica and Porcelain Materials.

THE CHESTER MICA AND PORCELAIN CO.

OFFER

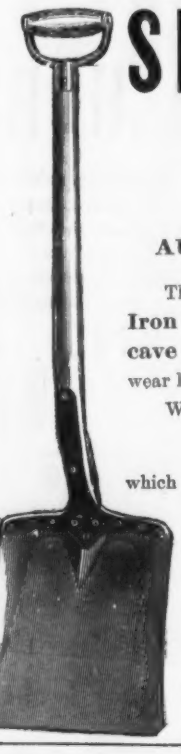
Mica of the Best Quality,
Feldspar of highest Standard and Purity,
Quartz, the Finest, Whitest, Best.
Kaolin, Asbestos and Baryta.

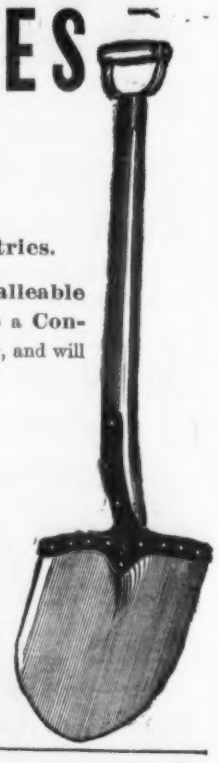
Best Terms, Wholesale and Retail.

Address, CHESTER MICA AND PORCELAIN CO., 87 Liberty St, New York.

KIMBALL'S PATENT.

"SOLID CAST STEEL" SHOVELS AND SPADES





Are used with entire satisfaction by some of the leading

Railroad and Mining Companies

in this country, and largely exported to

AUSTRALIA, SOUTH AMERICA, WEST INDIES and other countries.

The Blades are forged from **Best Quality Solid Cast Steel** and riveted to **Malleable Iron Straps,** which extend entirely across the blade, thus equalizing the strain. They have a **Concave Back,** which **strengthens** the **Shovel** and facilitates its use in digging or spading, and will wear longer than any other Shovel.

We claim they are the

Strongest and Most Durable Shovels Made,

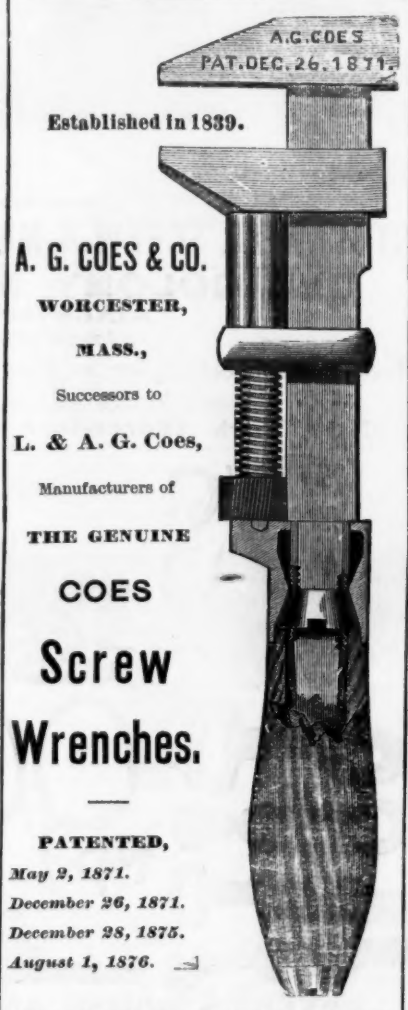
which claim is sustained by the large increase of our sales.

For Sale by all Hardware Dealers.

MANUFACTURED BY

KIMBALL SHOVEL CO.,

Baltimore, Md.



Established in 1839.

A. G. COES & CO.

WORCESTER, MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 2, 1871.
December 26, 1871.
December 28, 1875.
August 1, 1876.

The back strain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

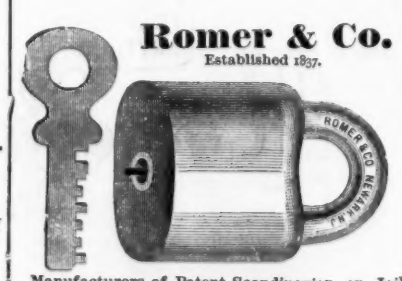
None genuine unless stamped

A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

Romer & Co.

Established 1837.



Manufacturers of Patent Scandinavian or Jail Locks. Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.

141 to 145 Railroad Avenue, NEWARK, N. J.

Illustrated Catalogue sent to the trade on application.

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets; Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk Clout and Clinch Box Nails, &c. Rivets made to Order.

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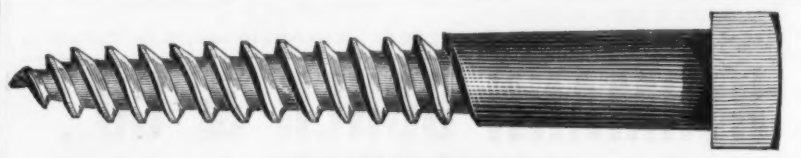
George C. Grundy, HARDWARE.

165 Greenwich Street.

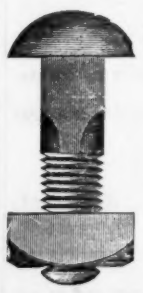
Agents for the Philadelphia Star Carriage and Tire Bolts.



WM. H. HASKELL & CO.

Pawtucket, R. I.,

MANUFACTURERS OF



COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

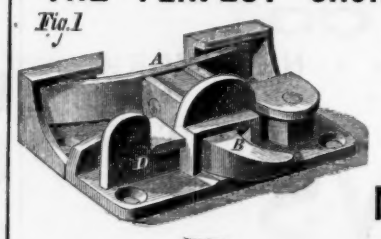
AND

TAP BOLTS.

HENRY B. NEWHALL 11 WARREN ST. N NEW YORK AGENT

THE PERFECT SASH TIGHTENER AND LOCK.

Fig. 1



Manufactured entirely from Malleable Iron, Burglar Proof, Anti-Rattling, Draws Sash to Exact Center. No Springs to Get out of Order.

The Best in the Market.

METALLIC CLOTHES PIN,

For either Wire or Rope Line,

Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by

CLARK & SMITH, Patentees, Chester, Orange Co., N. Y.

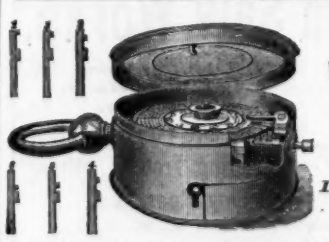
SOLE AGENTS,

J. I. BROWER & SON,

286 Greenwich St., New York,

Who keep a general assortment on hand for the country trade. **Jowett's Horse Rasps,** 14, 15 and 16 inch, **Maharay's $10 Tire Shrinker, Heller's Rasps.** Send for Circular.

SPECIAL DISCOUNTS TO JOBBERS.



BUERK'S Watchman's Time DETECTOR.

IMPORTANT FOR ALL LARGE CORPORATIONS AND MANUFACTURING CONCERNS.

Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.

N. B.—The suit against Imhaeuser & Co., of New York, was decided in my favor, June 10, 1874. Another suit has been decided against them and a fine assessed Nov. 11, 1876, for selling contrary to the order of the Court. Persons using clocks infringing on my Patent will be dealt with according to law.

J. E. BUERK, Proprietor,

P. O. Box 979. *No. 230 Washington Street, Boston.*

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N. Y. MALLET and HANDLE WORKS

Manufacturers of

Calkers', Carpenters', Stone Cutters' Tin, Copper and Boiler Makers'

MALLETS,

Hawsing Beetles, Hawsing and Calking Irons; also all kinds of Handles, Sledge, Chisel and Hammer Handles. Also

COTTON AND BALE HOOKS,

Patented Feb. 15, 1877; a new combination of Hooks.

450 E. Houston St., New York City.

SPECIAL NOTICE.

The undersigned, in view of the **Paris Exhibition** of 1878, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

ENGLISH,
FRENCH,
GERMAN
and **SPANISH,**

and that he bestows special attention upon a strictly correct rendering of **Technical Expressions** in matters relating to **Machinery, Metallurgy, Hydraulics,** &c The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages,

C. KIRCHHOFF,
Metal Reporter of The Iron Age,
83 Reade St., New York.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₩ ℔, gold.....10¼c
over 250 lbs.....11c. gold, net
Wilkinson's, ₩ ℔, gold.....11c. net
Eagle (American).....9 cents per lb—dis 20%

Apple Parers.—
Reading No. 72.....per doz $ 5 00 net
" " 74..... " 6 00 net
" " 75..... " 7 00 net
" " 78..... " 7 50 net
Peach Parers..... " 10 00 net
Little Favorite, corer and slicer..... " 7 50 net
Lots of 10 to 25 dozen special price.

Axes.—
Mann's Red Warrior .....Per doz. $8 50 @ 9 00 net
Red Indian..... " 8 50 @ 9 00 net
Red Chieftain, bevelled..... " 9 00 @ 10 00 net
Crown Prince ..... " 9 50 @ 10 50 net

Augers and Auger Bits.—
Bates' Nut Augers. .....dis 40&10 @ 50 %
Cook's Augers .....dis 50 @ 50&5 %
Watrous' Ship Augers.....dis 15 %
Benjamin Pierce Auger Bitts.....dis 40 %
Griswold Auger Bits..... dis 40&10 @ 50 %
Cook's " " .....dis 50 @ 50&5 %
Jennings' " " .....dis 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz...dis 25&10 %
Stearns' Pat. Hol. Augers " $48 " ...dis 25&10 %

Balances.—
Light and "Common".....dis 25&10 %
All other Spring Balances.....dis 25 %

Bells.—
Bevin Bros. Mfg Co. Light Hand Bells.....dis 70 @ 75 %
Swiss Pattern Hand Bells.....dis 50 @ 50&10 %
Connell's Door Bells.....dis 50 @ 50&10 %
Gt. Western & Kentucky Cow, new list. .....dis 50 %

Bolt and Rivet Clippers.
Chambers' No 1, for ⅝ bolt, each ...$ 7 50 }
" " 2, " ½ " ... 9 00 } dis. 25 %
" " 3, " ⅜ " ... 12 00 }

Boring Machines.—
Upright, with Augers.....List $9 00 dis 40&10 %
" without Augers ..... " 5 50 dis 40&10 %
Angular, with Augers..... " 11 00 dis 40&10 %
" without Augers..... " 7 00 dis 40&10 %

Bolts.—Eastern Carriage Bolts .....dis 75&37 ½—cash
Philadelphia " " .....dis 60&10 @ 60&20 %
Stanley, Wrought Shutter.....dis 50 %
Braces.—Barber's.....dis 40&5 %
Fackus.....dis 50 @ 50&10 %
Spofford.....dis 50 %
American Ball.....dis 25&10 %
Butts.—Cast Fast Joint, Narrow.....dis 60&10 %
" " Broad.....dis 65&10 %
Cast Loose Joint, Narrow.....dis 70&10 %
" " Broad.....70&10 %
" Acorn, Loose Pin.....dis 65&10 %
" Acorn " Jap'd.....dis 67½&10 %
Mayer's Loose Joint.....dis 70&10 %
Wrought Loose Pin.....dis 40&10 %
" Table Hinges and Back Flaps.....dis 55&10 %
" Narrow, Fast.....dis 40&10 %
" Loose Joint.....dis 40&10 %

Blind Butts.
Parker.....dis 60 @ 60&10 %
Clark.....dis 60 %
Shepard.....dis 60 %
Lull & Porter.....dis 66⅔&10 %
Huffer's.....dis 33⅓ @ 33⅓&10 %

Chains.—German Halter and Coil.....dis 30&5 % gold
Galvanized Pump..... ₩ ℔ @ 10½c net
Best Proof Coil Chain—(English).

₩ ℔	11¼	8¼	7¼	7¼	8¼	8¼	7c gold
	5-16	¼	5-16	⅜	7-16	½	⅝ in.

Chisels.—Socket Framing.....dis 65, 5&10 %
Socket Firmer..... dis 65, 5&10 %
Butcher's.....$5 00 to £ gold

Coasters.—Bed .....dis 50&10 %
Plate.....dis 50&10 %

Coffee Mills.—Box and Side.....dis 25 %
Enterprise.....dis 20 %

Cutlery.—Walden Pocket.....dis 30 @ 35 %
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.—
Hart Mfg Co.'s.....dis 65, 5&10 %
Adjustable Handle.....dis 20 %

Fry Pans.
Tinned.....dis 50&10 @ 60 %

₩ doz.	$3 50	4 00	4 50	5 00	5 50	6 50	7 50	9 00	10 00
No.	0	1	2	3	4	5	6	7	8

Burnished.....dis 50&10 @ 60 %

₩ doz.	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00
No.	0	1	2	3	4	5	6	7	8

Files.
Nicholson.....dis 35 %
Disston.....dis 35
Butcher.....$4 50 £ gold
Spencer.....$4 50 @ 4 75 £ gold

Fluting Machines.
Imperial—4¼ in. roll.....each $2 50 net
" —6 in. roll..... " 3 00 net
Eagle—3½ in. roll.....per doz., $30 00 }
" —5½ in. roll..... " 40 00 } dis 45 %
Crown—1¾ in. roll.....Each 4 00 }
" —6 in. roll..... " 4 75 } dis 45 %
" —8 in. roll..... " 7 25 }
Geneva Fluter.....per doz. 15 00 net
Favorite com. fluter & Sad-iron..₩ doz $20 dis 25&10 %

Hammers.
Yerkes & Plumb's.....dis 25 @ 30 %
Hammond & Son's.....dis 25 @ 30 %

Hatchets.
Yerkes & Plumb.....dis 25 @ 30 %
Hammond.....dis 25 @ 30 %
Hunt.....dis 25 %

Hinges.
Strap and T.....dis 60 @ 60&5 %

Horse Nails.

	Nos. 5	6	7	8	9	10
Ausable	30	27	25	24	23	22
" Polished & Pt'd and Blued and Pointed	31	28	26	25	24	23
Globe.....Net list	26	23	21	20	19	18
Clinton	22	20	19	18	17	
" Polished and Pointed	23	21	20	19	18	

Southern, all sizes.....₩ ℔ 14c. net
Discount on Ausable and Clinton, 20 %; Globe, net.

Locks and Knobs.
Branford.....new list, dis 6⅔&10&2 % cash
Gaylord Cabinet.....dis 25&2 % cash
United States Lock Co.....dis 35 %
American Padlocks.....dis 33⅓, 5&2 % cash
Scandinavian Pad Locks.

₩ doz.	$5 00	5 50	6 50	7 50	8 50	10 00	12 50 } dis 50 %
No.	57	58	59	60	61	62	63 }
₩ doz.			$18 00		26 00		33 00 } dis 50 %
No.			64		65		66 }

Lanterns.—
Square Candle and Oil.....₩ doz. $2 75 @ 3 00
Tubular.....No. 0, $10 50; No. 1, 12 50 ₩ doz. net
Guards, 50 cents extra per doz. net.

Mattocks.—
Long and Short Cutter.....₩ doz. $9 00 @ 9 50 net
Pennsylvania Pattern..... " 9 50 @ 10 00 net

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½&10 %
Lincoln's " .....dis 62½&10 %
Landers, Frary & Clark's Petroleum.....dis 20&10 %
Brass Liquor Cocks .....dis 50 %
Cork Lined " .....dis 65 @ 65&10 %

Meat Cutters.—Dixon's.....dis 25 @ 30 %
Woodruff.....dis 25 @ 30 %
Stowe.....dis 25 @ 30 %
Hale's.....new list, dis 50&2 %
American.....dis 25 %
Stuffers.....dis 25 @ 30 %
Enterprise Stuffers.....dis 20 %

Planes.—Sandusky.....dis 35 %
Ogontz.....dis 50&10 %
Bailey.....dis 25&10 %

Plane Irons.—Sandusky.....dis 10&10 %
Butcher's.....gold £, $5 50

Plumbs and Levels.
Stanley's Adjustable.....dis 60&10 %
" Non-Adjustable.....dis 60&10 %

Picks.—Philadelphia.....dis 50 %
Hunt's .....dis 25 %

Pumps.—Eickford.....$7 00, dis 20&10 %

Rules.—Stanley Boxwood.....dis 60&10 %
Stanley Ivory.....dis 50&10 %

Steelyards.—Hart's Pattern.....dis 60&10 %

₩ doz.	$14 50	15 75	21 00	26 50	31 50	35 50
Lbs	50	100	150	200	250	300

American Pattern.....dis 25 @ 25&10 %

₩ doz.	$5 50	7 00	9 00	10 00	11 00	12 00
Lbs	50	100	150	200	250	300

English Pattern..... 25 @ 25 %

₩ doz.	$7 00	8 67	10 67	12 67	14 67	16 67
Lbs.	50	100	150	200	250	300

Squares.—
Steel and Iron.....dis 50 %; full case, dis 50&10 %
Try Squares, Stanley.....dis 45&10 %
Disston's Try Squares.....dis 45 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₩ doz. $9 00 net
Clipper No. 10, Bronzed Blade Boxed and Sharpened.....₩ doz. $8 50 net
Clipper No. 8, Painted Red, Boxed and Sharpened.....₩ doz $8 25 net

Saws.—Disston's Hand, Panel and Rip.....dis 20 %
Disston's Circular.....dis 30 %
Cross-Cut No. 2, Plain Tooth..₩ ft., 45c net
" " Patent Tooth.....₩ ft., 43c. net
" " Champion Tooth....₩ ft., 35c. net

Shovels and Spades.
Rowland.....dis 50&5 %
Oliver Ames & Sons, new list.....dis 32½ %
Not stamped "Ames".....dis 37½ %

Sad Irons.—4 to 10 lbs.....₩ ℔ 2¾ @ 2¾ c
Mrs. Potts' Patent.....dis 30 @ 40 %

Stone.—Arkansas Oil Stone.....₩ ℔ $2 00 net
Washita Extra..... " 35c net
" No. 1..... " 30c net
" " 2..... " 25c net
" Slips..... " 6 c net
" Axe..... " 25c net
Turkey Oil Stone No. 1..... " 16½c net
" " " 2..... " 10c net
" Axe Stone..... " 25c net
Hindostan Oil Stone No. 1.....₩ ℔ 4 @ 4½c net
" Axe Stone..... " 5 @ 5½c net

Screws.
Flat Head Iron.....dis 55 %
" " Brass.....dis 50 %
Round Head Brass.....dis 35 %
" " Iron.....dis 45 %

Spoons.—
Plated.....dis 40 @ 40&5 %
German Silver.....dis 30&5 %
Britannia, Boardmans.....dis 50&10 %
" Parkers.....dis 50&10 %
Tinned.....dis 15 @ 20 %
" by case.....dis 20 %
Springs.—Torrey.....₩ doz $2 00 @ 2 10 net
Philadelphia .....5 in., $5 00; 8 in., $7 00 ₩ doz. dis 25 %
Chatfield.....No. 1, $3 50; 2, $4 00; 3, $6 00 ₩ doz. net
Gem Coil No. 1, Large Jap'd..... ₩ doz $3 50 }
" No. 2, Medium Jap'd..... " 2 50 } dis
" No. 3, Small " ..... " 2 00 }
Stocks and Dies......dis 10&5 %
Stove Polish.—Gem..... ₩ gross, $4 50, dis 5 %
Dixon..... " $6 00, dis 5 %
Onyx..... " $4 00 @ 4 25 net
Tacks, Brads, &c.—New List.....dis 55&10 %
Shoe Nails—
4-8 and larger, 9c; 3¼-8, 9½c ₩ ℔ New list, net
Double Pointed Tacks .....dis 40&5 %
Traps.
Genuine Oneida—Newhouse.....dis 30 %
Im. Oneida—Newhouse list (1st qual.).....dis 60 %
Vises.—Solid Box, Trenton.....₩ ℔ 11½ @ 12½c net
Wrenches.—
Girard (Coe's Pattern).....dis 50&10 %, case 50, 10&5 %
Agricultural—
₩ doz 10 in., $3 60; 12 in., $5 40 net; case dis 5 %
Coes' Genuine.....dis 5%&10 %
" Pat. Wrot Bar .....dis 60&10 %
" " Mall " .....dis 75&10 %
Taft's " Wrot " .....dis 75 @ 75&10 %
Phila. Tool Co., Duplex.....dis 25 %
Wire.—
Bright or Ann'd, No. 0 to 18.....dis 57½ %
" " No. to 26.....dis 57½ %
" " No. to 36.....dis 62½ %
Coppered 0 to 18.....dis 47½ %
Tinned Broom Wire.....dis 47½ %
Galvanized, No. 7 to 18.....Market list. dis 30 %
Wringers.—Novelty No. 10.....₩ doz. $60 00 net
Novelty No. 2..... " 63 00 net
Universal, No. 2½..... " 60 00 net
" No 3..... " 65 00 net

PITTSBURGH.

Merchant Iron.

Flat Bar.

1½ to 4x⅜ to 1 in.....1.80c
4¼ to 6x⅜ to 1 in.....1.90c
1¾ to 6x1¼ to 1½ in.....2.20c

Rounds and Squares.

1 to 1¾ in.....1.80c
2 to 2⅝ in.....2c
2⅝ to 3½ in.....2.30c
3⅜ to 4 in.....2.80c
⅝ to ⅞ in.....1.90c

Horse Shoe Bar—all sizes.....2.80c

Heavy Bands.

3½ to 6x¼ and 5-16 in. 2c
1½ to 3½x⅛ & 5-16 in. 2c

Light Bands.

3 to 6x⅛ to 3-16 in.....2.10c
1¼ to 2¾x⅛ to 3-16 in..2.30c
Same sizes X No. 11 and No. 12 2-10c. extra.

Hoop Iron.

⅝ & 9-16, Nos. 13 to 16..4.50c
¾&11-16, Nos. 13 to 16.. 4c
⅞&13-16, Nos. 13 to 16..3.50c
1 & 1⅛, Nos. 13 to 15..3.10c
1¼ to 2, Nos. 13 to 15..2.70c
1¼ to 2, Nos. 16 to 18..2.90c
2¼ to 3½, Nos. 13 to 15..2.80c
The prices under Hoop Iron do not apply to Cotton Ties.
1-10c ₩ ℔ extra for each gauge lighter.

Oval Iron.

⅞ to 1¼ in.....2.20c
⅜ to ¾ in.....2.40c

Half Oval & Half Round

⅞ to 1¼ in.....2.50c
⅜ to ¾ in.....3c

Sheet Iron.

	Com'n. Charc'l	
No. 10 to 14	2.60c	4.10c
No. 15 to 17	2.80c	4.30c
No. 18 to 21	3.10c	4.60c

All Sheets, No. 18 and lighter, over 30 in. wide, not less than 2-10c. extra.

Wood's Patent Planished Sheet.

1st quality (A).....10½c
Plate Iron—3-16 to ½ in. thick.....2.60c

Galvanized Iron-Juniata.

Nos. 14 to 20.....12c
Nos. 21 to 24.....13c
Nos. 25 and 26.....14c
Common and imperfect Juniata, 45 to 50 % off. Discount, 30 to 40 %.

Roofing Iron, Corrugated or Crimped.

Galvanized Common. Black.
No. 20.....7c, net cash
No. 21 to 24.7½&8c, "
No. 20.....4c
Nos. 21 to 24.....4¼c

Bridge Iron.

Carnegie Bros. & Co.'s list.

Beams and Channels.

Solid Wrought Iron Beams, 3 to 10½ in. x30 ft..₩ ℔ 3 c
" " " " 12 in. by 25 ft..... " 3
" " " " 15 in. by 25 ft..... " 3½c
Deck Beams, 7 to 9 in. by 30 ft..... " 3 c
Channel Bars, 1¾ to 10 in. by 30 ft..... " 3 c
" 12 in by 30 ft..... " 3½c

Tee Iron.

1 in. x1 in. to 5 in. x3 in.....₩ ℔ 2.9c

Angle Iron.

Equal Sided, 1x1 to 1¾x1¾ in.....₩ ℔ 2.7c
" 2x2 to 4x4..... " 2.6c
Unequal Sided, 2x1¾ to 5x4..... " 2.6c
Square Root Angles, 2x2 to 3½x3½..... " 2.6c
Star Iron, 1¾x1¾ to 4x4..... " 2.7c
Sash Iron, 1¾x¾x3-16..... " 3.25c
Miscellaneous Shapes, various shapes...₩ ℔, 2.6 to 3.5c

Nails.

Fence and Brads.

10d to 60d	$2.50	4d and 5d	$3.25
8d and 9d	2.75	3d	4.00
6d and 7d	3.00	2d	5.25

Barrel.

¾ in.	6.50	1⅛ in.	4.25
⅞ "	5.50	1¼ "	4.00
1 "	5.00	1⅜ "	3.50
		1½ "	3.25

Lining.

⅝ in.	7.00	¾ in.	8.50
		8d	3.25
Tobacco Hhd.		6d and 7d	3.50
10d	3.00		

Clinch—All sizes.....4.25

Slating.

5d	3.50	3d	4.25
4d	3.50	2d	5.50

Finishing.

1 in.	7.50	1⅜ to 1¾ in.	4.50
1¼ "	6.50	2 in.	4.25
1⅛ "	4.75	2½ "	4.00
		3 " and over.	3.75

Casing and Box.

10d to 30d	3.25	6d	3.75
8d	3.50	4d	4.00
		3d	5.00

Fine Blued.

4d	4.25	3d	5.50
		2d	6.25

Cut Spikes—All sizes.....2.75

Boat Spikes—All sizes.....3.25

Each half keg 10 cents extra.

TERMS.—Note or acceptance at 60 days; or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 200 kegs or over.

Steel.

Square, Flat and Octagon Tool Steel.

⅜ to 2 in.	13c	7-32 and 4½ to 5 in.	16c
5-16 and 2½ to 3 in.	14c	3-16 and 5½ to 6 in.	19c
¼ and 3½ to 4 in.	15c	5-32 in.	24c

Single and Double Shear Nailers—Same as Tool.
Knife, Tap, Die, Mill Pick, Drill—Ordinary sizes.....13c

Machinery Steel—Round.

⅜ to 2 in.	7½c	7-32 and 4½ to 5 in.	10½c
5-16 and 2½ to 3 in.	8½c	3-16 and 5½ to 6 in.	12½c
¼ and 3½ to 4 in.	9½c	5-32 in.	18½c

Cast Spring Steel.

1 to 4x¾ to ⅜ in..... 6½c | ⅛ to 3x5-32 to 3-16 in...7½c | ⅛ to 1¾x5-32 to 3-16 in..8½c

Agricultural Steels.

Solid Cast Steel Plow, 4 to 16 by 3-16 to ¾ in..... 7c
"Iron Center Plow," 4 to 16x3-16 to ¾ in..... 8c
"Iron Back Plow," 4 to 16x3-16 to ¾ in..... 8½c
Soft Steel Center Plow, 4 to 16x3-16 to ¾ in..... 9c
Landside and Cultivator, C. S., ⅛ in. thick..... 9½c
Circular Plow Coulters, 5-32 to ¼ in. thick.....11c
Reaper and Scythe.....13c
Fork and Hoe.....7c
Horse Rake Teeth, to length.....8c
Finger Bar.....8½c
Cutter Bars, C. S.....9½c
" " German Spring Steel.....7½c
Cornstalk Cutter beveled to length.....8c
Planters' Hoe, C. S.....9c
Hoe, C. S.....7½c

Sheet Steels.

German, 10 to 16 g.	8c	Common C'st, 17 to 20 g.	10c
" 17 to 20 g.	11c	Best Cast, 10 to 16 g.	13c
Common C'st, 10 to 16 g.	9c	" " 17 to 20 g.	14c

Rolls and Castings.

Furnace, Floor and Straightening Plates.....1¼ @ 2c
Housings and Castings not otherwise specified....2½c
Guide Plates.....3 c
Spindles and coupling boxes.....2 @ 2½c
Sand Rolls and Pinions, large size.....2½c
" " small size.....3 c
Pipe Mill Castings.....4 c
Rolling Mill Castings under 50 lbs.....3 c
Spur and Bevel Wheels, large.....3 @ 3½c
" " small.....4 @ 4½c
Pulleys up to 30 inches.....4 c
" over 30 inches.....3½ @ 3½c
Engine Castings, light.....3½c
" " heavy.....3½c

Chilled Rolls.

6 to 7 in. diam., 7 to 20 in. long.....6 c
8 to 15 in. " 8 to 40 in. " .....5 c
15 to 24 in. " 15 to 72 in. " .....4 c
24 to 32 in. " 72 to 108 in. " 4½c

Heavy Hardware.

Bolts, Screws, Nuts, etc.

Lewis, Oliver & Phillips, discount off Standard List.
Carriage & Tire Bolts, ordinary orders 75, & 2½ off net
Stove Bolts.....60&5 % off net
Elevator Bolts.....30 % off net
Machine and Square Head Bolts.....60&10 % off net
Coach and Lag Screws.....60&10 % off net
Bolt Ends.....60&10 % off net
Fat. Hot Pressed Sq. and Hex. Nuts.....8c ₩ ℔ off net
Washers, all made from new band iron..8c ₩ ℔ off net
Nuts and Washers in 25 ℔ boxes, ½c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₩ ℔ ex. Nuts and Washers in 5 ℔ boxes, 1c ₩ ℔ ex.
Strap and T Hinges.....60c&12½ % off net
Harrow Teeth.....net
Skein Bolts.....net
Cast Iron Washers.....3½c ₩ ℔ net
Fire Shovels and Pokers.....50 % off

Wagon Hardware.

Single Trees, Neck Yokes and Double Trees, made from best selected hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, Ironed complete, Irons all Wrought.....each, 25c net
No. 2 Western Plow Single Tree, Ironed complete, Irons all Wrought.....each, 35c net
No. 3 Wagon Single Tree, Iron complete, Irons all Wrought, except Malleable Ferrule.....each, 50c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against.....each, 50c net
Neck Yoke, Ironed complete, Irons all Wrought except End Ferrules, with Wt. Iron Rings.....each, 60c net
Southern Plow Double Tree, Ironed complete, Irons all Wrought.....each, 50c net
Wagon Box Strap Bolts—
For orders of 100 Set, 45&10 % dis.

10 in. long	by 7-16	at Screw End,	₩ set of	8	bolts..	45c
12 in. "	½	" "	"	8	" ..	55c
10 in. "	9-16	" "	"	8	" ..	65c
12 in. "	9-16	" "	"	8	" ..	70c
14 in. "	9-16	" "	"	8	" ..	80c
10 in. "	⅝	" "	"	8	" ..	80c
12 in. "	⅝	" "	"	8	" ..	80c
14 in. "	⅝	" "	"	8	" ..	90c
16 in. "	⅝	" "	"	8	" ..	1.00
18 in. "	⅝	" "	"	8	" ..	1.10
20 in. "	⅝	" "	"	8	" ..	1.20

5c ₩ set for each additional inch over 14 inches. All lengths made.

Chains, Straight or Twist Link.
Reiter & Morton's List.

5-16	7c	½	5¾c
⅜	6c	9-16	5¼c
7-16	6c	⅝	5c

Net cash, 30 days.

Horse Shoes, Etc.—In 100 keg lots.

Juniata Horse Shoes.....per keg, $3 50
" Mule " " 4 50
" "Roadster" pattern..... " 3 75
Steel Toe Calks.....per 7½c lb.
Thistlewood & Co.'s Self-Sharpening Horse Shoes.....per keg, $5 25
Thistlewood & Co.'s Self-Sharpening Snow Shoes..... " 5 50
Toe Calks.....per lb. 8c

White and Red Lead.

Assorted Kegs (all sizes).....8c
25 ℔ Tin Pails, 100 ℔ Cases.....8½c
12½ ℔ Tin " " 9c
Red Lead.....in kegs, 6¾c; in barrels, 6½c.
Orange Mineral..... " 9½c; " 9 c.
Litharge..... " 6¾c; " 6½c.
Dry White Lead..... " 7½c; " 7½c.
White Lead in Oil in lots of less than 500 lbs., ½c additional.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1% per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount 75 %.

Single Strength.

Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$7.50	$6.75	$6.25	$5.7
11 x 14 to 16 x 24	8.50	7.75	7.25	6.5
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 36 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54				
30 x 56 to 34 x 56				
34 x 58 to 34 x 60				
36 x 60 to 40 x 60				
Double Strength.				
6 x 8 to 10 x 15	12.00	11.00	10.00	25
11 x 14 to 16 x 24	13.75	12.50	11.75	10.50
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	25.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 84 united inches, will be charged in the 84 united inches bracket.

CHICAGO.

(The Chicago Stamping Co., 10, 12 & 14 Lake St.)

August 9, 1878.

Tin Plate.—

10x14, IC, Ch'l. Good.	$6 25	14x20, IXX, Ch'l Best.	11 50
10x14, IC, " Best.	6 50	14x20, IXXX, " "	14 00
10x14 IX, " "	9 00	DC, 100 Plate " "	6 50
12x12, IC, " "	6 50	DX, " "	9 00
12x12, IX, " "	9 00	DXX, " "	11 50
14x20, IC, " "	6 50	DXXX, " "	14 00
14x20, IX, " "	9 00	IC, Roofing, " "	6 00
20x28, IC, Charcoal Roofing, Good		IX, " "	8 50
20x28, IC, " Best			12 50
20x28, IX, " "			11 00
10x14, IC, Coke Plates			6 00
14x20, IC, "			6 00
10x20, IC, "			9 50

Block Tin —
Large Pigs ..... 18c | Bars..... 20c
Small..... 19c

Zinc.—Sheet, 500 to 1000 ℔. Casks..... 6¼c
Loose Sheets..... 6½c
Slab Zinc or Spelter..... 6 c

Copper.—Bottoms..... 26c
Sheathing..... 24c
Planished..... 33c
Boiler lengths..... 35c
Ingot..... 19c
Bolt..... 26c

Braziers' Sheets.—
30x60, 6 to 7 lbs....₩ ℔ 32c | 30x60, 10 to 12 lbs...₩ ℔ 28c
30x60, 8 to 9 lbs.... " 30c | 30x90, 15 to 100 lbs. " 26c

Solder.—F. S. & Co.'s make
Best Fine..... 13c
No. 1..... 12c
Roofing..... 10½c
Braziers or Spelter Solder.....25 @ 27c

Antimony..... 16c

Babbit Metal—F. S. & Co.'s.....12c
No. 2..... 10c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24	3.00c	3.80c	5¾c	7 c
25 & 26	3.20c	4.00c	6 c	7¼c
27	3.40c	4.20c	6¼c	7½c

Galvanized Iron.—dis 42½ %

No. 16 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		
Russia Iron.—		No. 1 Stained	11c
Perfect	12c	In Sheets, 1c. higher.	
American Russia.—		B	9½c
A	10½c	In sheets, 1c higher	
Lead.—		Lead Pipe, in full coils	5
Pig	5 c	Lead Pipe, when cut	5¼
Bar	6 c	Sheet Lead	6
Wire—bright			dis 45 %
Coppered			dis 0 %

A. Garrison. J. H. Ricketson. Wm. Holmes

PITTSBURGH FOUNDRY.

A. GARRISON & CO.,

Manufacturers of

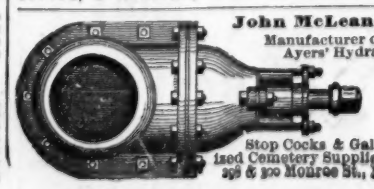
Chilled Sand and Patent Homogeneous Steel

ROLLS,

Both Solid and Hollow,

Ore and Clay Pulverizers, Rotary Squeezers, Haskin's Patent Double Spiral Pinions, and **Rolling Mill Castings of every description.**

OFFICE, 6 Wood St., - - PITTSBURGH.



John McLean,
Manufacturer of Ayers' Hydrants

Stop Cocks & Galvanized Cemetery Supplies
298 & 300 Monroe St., N. Y.

AXLES,

Common, Loose Collars, 3½ Cents per Pound.

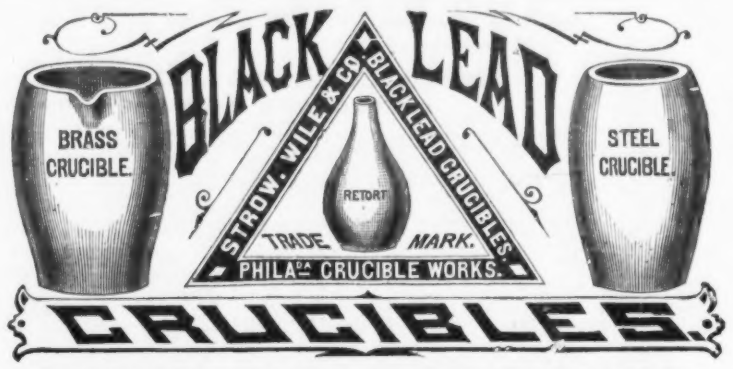
Springs, Carriage Hardware, Carriage Woodwork and Materials.

MACHINES, TOOLS AND SUPPLIES,

For Carriage and Wagon Makers.

Guy C. Hotchkiss, Field & Co.

622 to 642 East 14th St., New York.



FOR MELTING ALL KINDS OF METALS,

And Manufacturers of

Sunny Side Stove Polish.

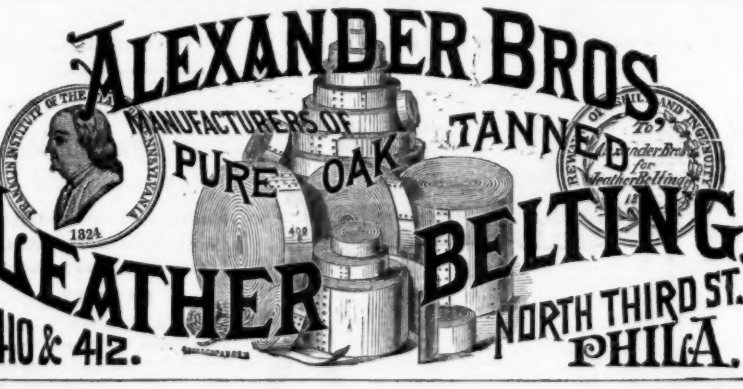
Lumber Pencils, Foundry Facings and Lubricating Plumbago.

WILE, SIEDEL & CO.,

Nos. 1324, 1326, 1328, 1330, 1332 & 1334 Callowhill St., Phila.

GENERAL AGENTS

Messrs. HALL & CARPENTER, 709 Market St., Phila.



WM. F. FOREPAUGH, JR. & BROS.

Manufacturers of SUPERIOR OAK TANNED

LEATHER BELTING.

Best Quality Lace and Strap Leather on Hand, Rivets, Belt Hooks, Dubbing, &c.

N. W. Cor. Randolph and Jefferson Sts., PHILADELPHIA.

☞ All Belts Warranted. Orders by Post immediately attended to.

Morse Twist Drill and Machine Co.,

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

Beach's Patent Self-Centering Chuck, Solid and Shell Reamers.

BIT STOCK DRILLS,

Drills for Coes, Worcester, Hunter and other Hand Drill Presses. Beach's Patent Self-Centering Chucks, Center and Adjustable Drill Chucks, Solid and Shell Reamers. Drill Grinding Machines. Taper Reamers, Milling Cutters and Special tools to order.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

PATENT

Budke's Patent Sheet Iron MEASURES.

Black and galvanized House, Steamboat, Stable and Well BUCKETS. Powder Kegs, Paint, Putty and White Lead PAILS.

DRIPPING AND BREAD

PANS;

Also Bar, Sheet and Tank Iron and Nails.

LEWIS, DALZELL & CO.,

Pittsburgh, Pa.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American".....₩ ℔ 9c. dis 20 %
Apple Parers.—Reading.....₩ doz $4.50
Lightning.....₩ doz 6.50
Reading "78".....₩ doz 7.50
Aiken's Tools.....dis 40&10 %
Anvil & Vise.—
No. 1, $4.50; 2, 3.75; 3, 3.00 each.....dis 25 %
Augurs & Bitts.—Snell's Auger.....dis 50 %
L'Hommedieu's Ship Augers.....dis 15 %
Jenning's Bitts.....dis 10& 10 %
Cook's Bitts.....dis 50 %
Shepardson's Double-Cut Bitts.....dis 45 %
" " Gimlets.....dis 45 %
Stearn's Extension Hollow Augers.....per doz $36.00
Bonney's " " " .....per doz 33.00
Axes.—Blue Jackets.....per doz 8.00
Red Cross.....per doz 7.50
" Handled.....per doz 9.50
Dowse " Boys'.....dis 15 %
Ax Handles.—
Oak Extra, 31 in., No. A.....₩ doz $2.25
" 34 in., No. A.....₩ doz 2.50
" 31 in., No. B.....₩ doz 1.75
" 34 in., No. B.....₩ doz 2.00
" 31 or 34 in., No. C.....₩ doz 1.25
Axle Clips.....dis 50 %
Balances.—Chatillon's.....dis 25&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....per ft. 30
" Half-Round.....per ft, ⅝, 2½c; ¾, 4½c
Wrought " .....per ft, ½, 3½c; ⅝, 4c; ¾, 5c
Bells.—Connel's Crank Gong.....dis 50&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1878.....dis 25 %
Brass " " 1878.....dis 25 %
Blind Fasts.—Lock Fasts.....₩ C sets $4.00
No. 6 Fasts.....₩ C sets 4.00
Veazie Fasts.....₩ C sets 7.00
Shedd's.....₩ C sets 8.00
Blind Hinges.—Mall. Hook, 3 holes....₩ C sets 5.00
Brad Awl Handles.—
Phœnix Adjustable.....₩ doz $2.00
Bolts.—Norway Iron Carriage.....dis 70&10 %
Common " .....dis 75&3 %
Borax.—Refined.....₩ ℔ 90
Boring Machines.—Snell Upright.....each, $3.25
Snell Angle.....each, 4.00
" Augers.....₩ set 1.75
Braces.—Barber's.....dis 40& 5 %
Spofford's.....dis 50 %
Backus'.....dis 60 %
Bracket Saws.
Bracket Saws, extra quality, to No. 5.....₩ gro $0.85
Steel Frame, with patterns.....₩ doz 7.50
Brackets.
H. B. & M. Flower Pot.....dis 50&10 %
Bronzed Shelf, M. B. & D. list.....dis 10&10 %
Bronze Hardware.—Norwalk Lock Co. dis 50&10 %
Butts.—Union Fast Joint.....dis 50& 10 %
" Loose " .....dis 75 %
" Japanned Acorn.....dis 75 %
" Silvered " .....dis 75 %
" Boston Finish.....dis 75&10 %
Centennial Spring.....dis 25 %
Carriage Jacks.—Climax.....₩ doz $15.00
" large size.....₩ doz 18.00
Cartridges.—U. S. Cartridge Co.....dis 60 %
Cards.—Sargent Horse and Curry.....dis 33⅓&10 %
" Cotton.....dis 25&10 %
" Wool.....dis 25&10 %
Casters.—Bed and Table.....dis 50&10 %
Chain.—Traces 6½, 10, 4, streight.....₩ pair 45c
" 6½, 10, 4, twisted.....₩ pair 50c
" 7, 12, 2, " .....₩ pair 75c
Coil 3-16.....₩ ℔ 10c
" ¼.....₩ ℔ 8c
" 5-16.....₩ ℔ 7c
" ⅜.....₩ ℔ 6c
" 7-16.....₩ ℔ 5¾c
" ½.....₩ ℔ 5½c
Chalk.—White, Carpenter's.....₩ gross 55c
Red, Carpenter's.....₩ gross 75c
Blue, " .....₩ gross 90c
Chisels.—Hart, Bliven & Mead, Framing.....dis 70 %
Underhill, Framing.....dis 25 %
Buck's Shank, Framing.....dis 25 %
Clothes Line.—
Galvanized Wire, 100 feet each.....₩ doz $4.50
Coal Hods.—Ironclad.—Galvanized.....dis 25 %
Japanned.....dis 30 %
Copper Rivets......dis 25 %
Cocks.—Brass, L. F. & C.....dis 50 %
Cordage.—Manila, usual trade dis.....₩ ℔ 12c
Jute.....₩ ℔ 9c
Cow Ties......dis 40 %
No. 30, 3 ft. No. 6 Wire, with toggle.....₩ doz $3.60
No. 35, 3 ft. " " with snap.....₩ doz 3.80
No. 40, 3½ ft. " " with toggle.....₩ doz 3.90
No. 45, 3½ ft. " " with snap.....₩ doz 4.10
No. 50, 4 ft. No. 4 " with toggle.....₩ doz 4.50
No. 55, 4 ft. " " with snap.....₩ doz 4.75
No. 60, 4½ ft. " 3 " with toggle.....₩ doz 5.38
No. 65, 4½ ft. " " with snap.....₩ doz 5.62
Crow-Bars. Cast Steel.....₩ ℔ 8c
Iron, Steel Pointed.....₩ ℔ 5c
Cutlery.—Pocket, American Shear Co.'s...dis 33⅓&10
Butcher Knives, "Woods," Lap Bolster, Square Handle.....dis 33⅓ %
Steak Knives.....dis 20 %
Lap Bolster, Oval Handle.....dis 25 %
Sticking.....dis 33⅓ %
Skinning.....dis 33⅓ %
Butcher, Common Round Handle, "Woods"...dis 25 %
Shoe Knives, "Woods".....dis 10 %
Dividers.—Cook's.....dis 25 %
Dog Collars.....dis 20 %
Dog Muzzles.—Automatic.....dis 15 %
Door Springs.—Torrey's Rod.....₩ doz $2.00
Gem Coil.....dis 10 %
Eccentric Steel Coil Spring, No. 1.....₩ doz $2.75
Door Stops.—"Thurston's".....dis 50 %
Drawer Knobs.—"Thurston's".....dis 50 %
Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %
Emery.—Wellington Mills.....₩ ℔ 10c
Alden's.....₩ ℔ 6c
Enamelled Ware.
Standard Mfg. Co. Kettles.....dis 50&10 %
" Sauce Pans.....dis 35 %
Felloe Plates.—Wrought.....₩ ℔ 8c
Files.—Madden & Cockayne.....dis 30 %
American File Co.....dis 40 %
Nicholson " .....dis 35 %
Fluting Machines.
Knox, with 6 inch rolls.....₩ doz $36.00
Geneva.....₩ doz 13.50
Rochester.....₩ doz 12.00
Forks.
W. C. & Co., Manure, reduced list.....dis 15&10 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, $1.00; 10-32, $1.10; 12-32, $1.20.....₩ doz gold.
Glass Cutters.
Combination Class Cutter and Knife Sharpener.....₩ doz $1.25
Grub Hoes.—K. P. & Co.'s No. 2.....₩ doz 7.50
Hammers.—Maydole's.....dis 15 %
Hammond's.....dis 20 %
Dowse's Steel, A. E.....₩ doz $4.00
M. B. & D.....dis 25 %
Hangers & Rollers.—Anti-Friction.....dis 60 %
Climax.....dis 50 %
Novelty.....dis 40 %
Common.....dis 50 %
Hand Screws.....dis 20 %
Hatchets.—C. F. Dowse, Warranted.....dis 25 %
Underhill.....dis 25 %
Hay Knives.—Lightning.....₩ doz $18.00
Hinges.—Strap and T (new list).....dis 60&10 %
Providence Plate.....₩ ℔ 40
Wrought Screw Hook.....₩ ℔ 40
Hoes.—W. C. & Co.'s (reduced list).....dis 15&10 %
Hooks and Staples.—Brewers'.....dis 50 %
Horse Nails. No. 6 7 8 9
National Finished..... .25 .21 .20 .19....dis 15 %
Putnam Pointed..... .25 .21 .20 .19.....net
Knobs.—"Norwalk."
Mineral.....₩ doz $0.75
Porcelain, Japanned Mtg.....₩ doz .50
" Por. Rose Nickel Mtg.....₩ doz 2.50
" Plated " " .....₩ doz 2.50
Silver Glass.....₩ doz 8.00
" Bell Pulls.....₩ doz 6.00
Lanterns.—Tubulars, No. 0.....₩ doz 10.00
Railroad, Oil, No. 43.....₩ doz 8.00
Guarded, Oil and Candle, No. 25.....₩ doz 3.50
Triangular.....₩ doz 4.00
Hurricane.....dis 20 %
Lead.—Sheet.....₩ ℔ 5½c
Pipe.....₩ ℔ 4½c
Locks.—Norwalk Lock Co. (reduced list)..dis 50&10 %
Eagle Cabinet.....dis 25 %
" Trunk.....dis 25 %
W. Wilcox & Co., Padlocks.....dis 33⅓&25 %
American Lock Co.'s Steel Key.....dis 33⅓ %
Metallic Sieves.—Mann's Patent.....dis 33⅓ %
Manure Forks.—W. C. & Co. (r'duc'd list).dis 15&10 %
Mattocks.—K. P. & Co., Long Cutter.....₩ doz $9.50
K. P. & Co., Short Cutter.....₩ doz 9.00
" Pick " .....₩ doz 9.50
Measuring Tapes.—Eddy's.....dis 20 %
Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's.....dis 50 %
American.....dis 25 %
Money Drawers.—Tucker's Alarm.....₩ doz $27.00
Mouse Traps.—Delusion.....₩ doz 2.00
Oilers.—Zinc and Tin.....dis 50 %
Brass and Copper.....dis 50 %
Ox Bows.—Extra finished and varnished.
1¾ in., ₩ doz. pair..$5.75 | 2 in., ₩ doz. pair....$9.00
1¾ in., " " .. 8.00 | 2¼ " " 11.00
Padlocks.—W. Wilcox & Co.'s.....dis 33⅓&5 %
Miller's Brass.....₩ doz $9.00
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔....₩ doz 6.50
" " 6 to 7 ℔....₩ doz 7.00
Planes.—Auburn Tool Co.....dis 50 %
English Iron.....dis 30 %
Bailey's.....dis 33⅓&10 %
Plated Ware.—Rogers & Bro.....dis 40&5 %
Pliers.—Vom Cleff & Co.'s.....Gold list.
Button's Wire Pliers.....dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co..dis 60&10 %
Pocket Knives.
American Shear Co.'s.....dis 33⅓&10 %
Potato Diggers.
W. C. & Co. reduced list.....dis 15&10 %
Pulley Blocks.....dis 33⅓ %
Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 55 %
" Pitcher Spout.....dis 55 %
Copper.....dis 25 %
Rivets.—Black.....dis 50 %
Carriage in 10 ℔ papers.....dis 40 %
Copper.....dis 25 %
Razor Strops.—Torrey's.....Full line.
Rules.—Stanley.....Boxwood, dis 60&10 %
" .....Ivory, dis 50&10 %
Sadirons.—Common.....₩ ℔ 2½c
Laundry.....₩ ℔ 5c
Tailor's Geese.....₩ ℔ 5c
Enterprise, "Potts".....dis 33⅓ %
Mrs. Potts' Large Polishing, Nickeled ₩ doz net $3.50
Sash Locks.—King & Hutchinson's, new list.dis 40 %
Hopkins & Dickinson's.....dis 40 %
Sandpaper.—Baeder & Adamson.....dis 15 %
M. B. & D.....dis 20 %
Sash Weights.—Patent Eye.....₩ ℔ 1½c
Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20&5 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1.....₩ foot 35c
" Champion " .....₩ foot 35c
Disston's, Common " .....₩ foot 44c
" Gt. American " .....₩ foot 44c
Boynton's Lightning " .....₩ foot 45c
Saw Setts.—Spring Lever.....₩ doz $10.00
Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 20&5 %
Welch & Griffith.....₩ doz $12.00
Scales.—Fairbanks.....dis 25 %
Howe.....dis 25 %
Screws.—Aiken's Flat-Head Iron.....dis 70 %
American Flat-Head Iron.....dis 70 %
" " Brass.....dis 55 %
" Round-Head " .....dis 40 %
" " Iron.....dis 60 %
Grilley " Nickel-plated Piano..dis 55&5 %
" " " Common..dis 60
Shaves.—Kimball's.....₩ inch 7½c
Watrous.....dis 15 %
Shears.—American Shear Co.....dis 75 %
Shot.—Tatham's.....₩ ℔ 6c
Shovels.—O. Ames.....dis 33⅓ %
O. Ames, other brands.....dis 37½ %
M. B. & D.....dis 37½ %
Oxford, Birmingham Pattern.....dis 45 %
Spoons.—Tinned Iron.....dis 15 %
Britannia.....dis 50 %
Rogers' A No. 1.....dis 40&5 %
Stock and Dies.—King's.....dis 10&5 %
Tacks.—A. Field & Son's.....dis 50&10 %
Pittsfield.....dis 50&10 %
Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 50&10 %
Blake's.....dis 50&10 %
Tree Scrapers.—No. 1.....₩ doz. $2.00
No. 2.....₩ doz 3.00
No. 3.....₩ doz 4.00
Vises.—Solid Box, Blacksmith's.....₩ ℔ 10½c
Simpson's Adjustable.....dis 25&10 %
Howard Vise Co.....dis 25 %
Window Springs......dis 10 %
Babcock's No. 3.....₩ gross $6.25
" " 4.....₩ gross 4.50
Wire Goods.—Opte Hooks and Eyes, &c..dis 70&10 %
Wrenches.—A. G. Coe's.....dis 50&10 %
Girard Mfg. Co.....dis 50&10&10 %
Girard, in case lots.....dis 50&10, 10&10 %
Wringers.—Universal, No. 2.....₩ doz $63.00
Universal, No. 2½.....₩ doz 60.00
Novelty, No. 10.....₩ doz 60.00
" No. 2.....₩ doz 63.00
" No. 22.....₩ doz 67.00
Excelsior, No. A.....₩ doz 84.00
" No. B.....₩ doz 92.00
" No. CC.....₩ doz 114.00
Novelty Set Tub, E.....₩ doz 60.00
Eureka.....₩ doz 54.00
Zinc.....₩ ℔ 6¾c
Withington, Cooley & Co.—Hoes, Rakes, Forks, &c., dis 40 %. Special rate for Export.

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char..	$ 6.50	DX, 12¼x17, B. Char.	$ 8.50
IX, 10x14, " ..	8.50	DXX, 12¼x17 " ..	10.50
IC, 12x12, " ..	6.50	DXXX, 12¼x17 " ..	12.50
IX, 12x12, " ..	8.50	IC, 20x28, " ..	16.00
IC, 14x20, " ..	6.50	IX, 20x28, " ..	20.00
IX, 14x20, " ..	8.50	IXX, 20x28, " ..	25.00
IXX, 14x20, " ..	10.50	IC, 14x20, Best Roof..	8.00
IXXX, 14x20, B. Char.	12.50	IX, 14x20, " ..	9.00
IXXX, 14x20, " ..	14.50	IC, 20x28, " ..	12.50
IC, 12x24, " ..	6.75	IX, 20x28, " ..	16.50
IC, 14x14 " ..	13.50	IC, 10x14, Best Coke..	5.75
IX, 14x14, " ..	16.00	IC 14x20, " ..	5.75
IXX, 14x14, " ..	18.50	IC, 10x20, " ..	7.00
DC, 12¼x17, " ..	6.50		

Sheet Iron.	Com'n.	S L U Sm'th.	D. Ref'd Sm'th.	Juni'a Sm'th
No. 16 to 20	2.9c	3.8c	5.6c	7.2c
No. 22 to 24	2.9c	3.8c	5.8c	7.4c
No. 26	3.0 c	4.0 c	6.0 c	7.6c
No. 27	3.10c	4.1c	6.2c	7.8c

Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12.....per lb. 12¼c
No. 1 Stained—No. 9, 10, 11, 12.....per lb. 12¾c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₩ ℔.

Patent Planished Iron
No. 24 to 27, A quality.....per ℔ 9.10¼c
" B " 9¾c
For less than Bdle. add 1c. per lb.

Galvanized Sheet Iron.
Juniata, or 1st quality.....dis 40&5 %

Block Tin.

Banca, Large Pigs	31c	do. Small	18
Straits, Large Pigs	17c	Bar	19c
Eng. Ref'd, Large Pig	17c		

Solder.

Extra in Bars	13c	No. 2, in Bars	9¼c
No. 1, in "	10½c	Spelter Solder	44c
Pig Lead—Pigs	4c	In Bars	5c
Antimony			15c
Bismuth			$ 1.50
Nickel			2.25
Crucibles.—Dixon's			₩ No. 40

Babbit Metal.

No. 1	₩ ℔. 16c	No. 3	₩ ℔ 11 c
" 2	" 14c	" 4	" 7¼c

Copper.
Brazier's, 30x60, 14 to 100 lbs. Sheets.....28
" " 10, 11 & 12 lbs., " ".....30c
" " 8 and 9 lbs. " 32c
" " 6 and 7 lbs. " 34c
Tinned, 14x48, 14 and 16 oz.....26c
Planished, 14x48, 14 and 16 oz.....34c
" Boiler Sizes. 14 and 16 oz.....38c
Gutter Copper, 20 and 24x72, 10, 11 and 12 ℔. Sheets.30c
" 14 ℔. Sheets.....28c
Reservoir Copper, 16x60 and 18x60.....30c
Bar Copper, Square and Round, ¼ to 1¼ inch.....28c
" " " ⅝ inch.....31c
Copper Bottoms.....28c
Soldering Coppers.....3.c

Brass.
Roll, No. 10 to 26, 12 in. in width.....27c
" 20, 12 in. in width.....28c
" 24, 16 " 35c
" 24, 16 " 36c
" 26, 16 " 47c
Platers, No. 40, 6 " 50c

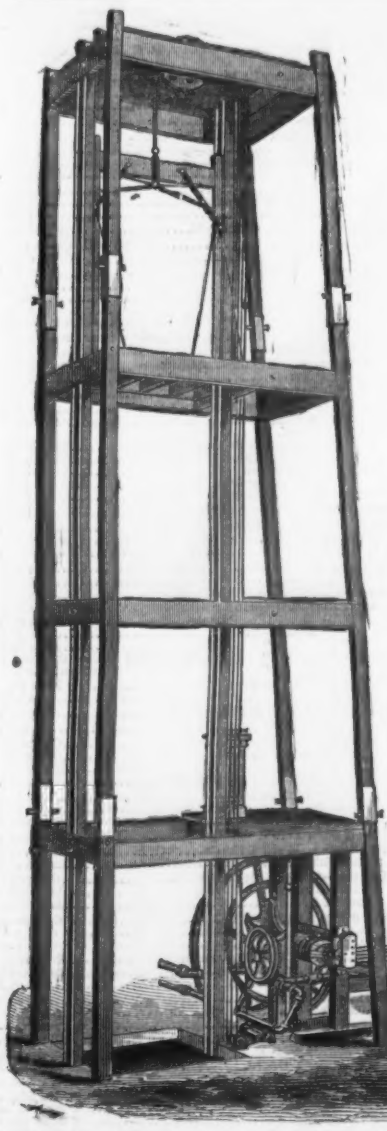
Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper.
No. 0 to 20	30c	41c	No. 24	37c	47c
" 21	33c	43c	" 25	40c	50c
" 22	34c	44c	" 26	42c	52c
" 23	35c	45c	" 27	45c	55c

Brass Spring Wire, 3c. ₩ ℔ advance.

Brass Tubing.
Plain to No. 20.....40c | 5-16 inch.....40c
⅜ inch.....40c | ¼ " 70c
Copper Rivets and Burs.....dis 10 %
Brass Kettles 7 to 13 inches.....₩ ℔ 35c.
" all sizes over 13 inches....." 40c.
Sheet Zinc.—600 lbs. cask....." 6c.
250 lbs. cask.....c
Sheet.....1

Wire.—Iron, Bright Market.....dis 50
Iron, Coppered Market.....dis 45 %
Fence, Nos. 7, 8 and 9.....₩ ℔ 4½c
Trellis, Nos. 10 and 11....." 5 c
" No. 14....." 5 c
Hay Baling, Charcoal, No. 10 and 11....." 5½c
" " No. 12....." 5¾c
Broom, Tinned, Nos. 18 to 22....." 11c
Fence Staples.....per keg 5½c
Per lb.....6 c
Iron Rivets.—Black, papered.....dis 25 %
Tinned, papered.....dis 5 %
In bulk.....new 3-16 ¼ 5-16 ⅜ in diam
7-8c 7-8c 6½c 6-3.3 per lb
Tacks.—New Hardware List.....dis 50 %
Sad Irons.....₩ ℔ 8 c
Enameled Kettles.—Standard Mfg. Co.dis 50&10
Enameled Sauce Pans.
Standard Mfg. Co.....dis 40 %
Enameled Boilers.—Standard Mfg. Co....dis 40 %
Dripping Pans.—Smooth Iron.....₩ ℔ 8½c
Geneva Fluters.....per doz $1.50
Monroe Fluters....." 1.50
Stove Polish.—Dixon's.....per gross 6.00
Gem.....4.50
Japanese.....3.50
Dixon's, in bulk.....₩ ℔ 8c
Coffee Mills.—Parker's.....dis 40
Granite Iron Ware.....dis 40
Spoons.—New list.....dis 15
Retinned Iron Ware.....dis 60 %
Plain Stamped Ware.....dis 60 %
Japanned Ware.—St. Louis List.....dis 40 %
Try Pans.....dis 50
Bars.....dis 50



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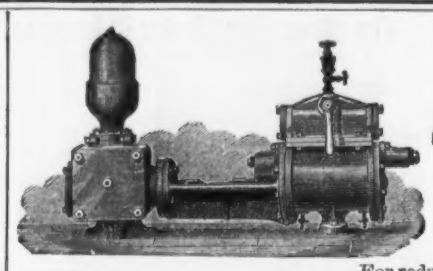

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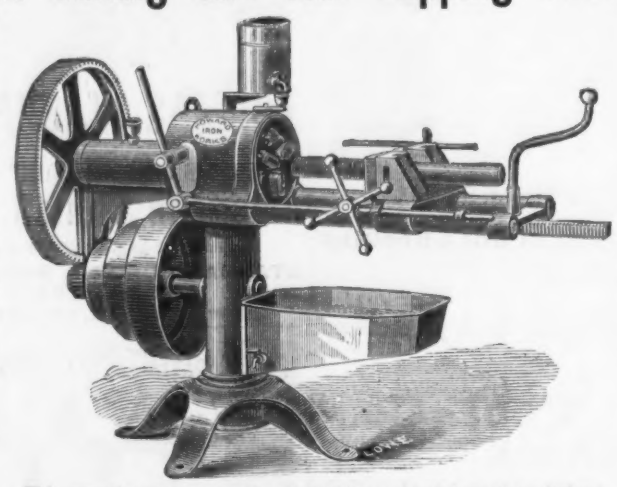
Screw Cutting and Nut Tapping Machines.



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No. 5½ " ¼ to 2 " 350
No. 6 " ⅜ to 3 " 760
No. 8 " ⅜ to 3 " 900
No. 4 (Double Header) cuts from ¼ to ⅞ inch, price, 350

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Send for complete (illustrated) catalogues.
Cuts **300** ¾-inch Bolts, 2 inches each, in one hour.

This engraving represents a No. 5½ Machine, and cuts from ⅜ to 2 inches.
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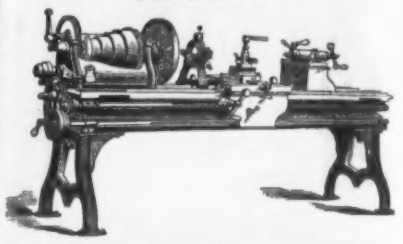
P. BLAISDELL & CO.,
Manufacturers of



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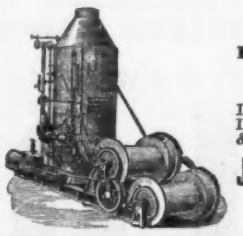

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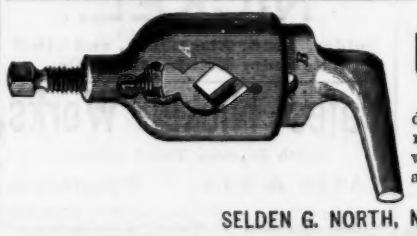

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It is very strong. Holds very strong. Will not deface finished work. Holds round, square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog.
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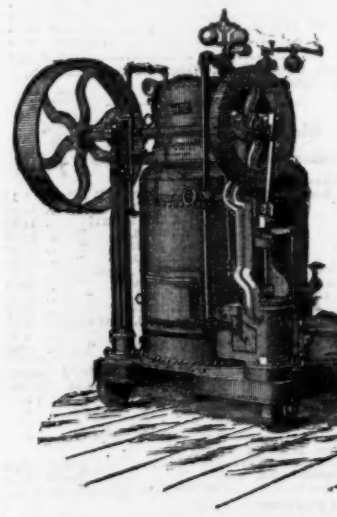

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Lightning Screw Plates, Green River Drills,
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SAXTON & AMEDON, Braces, all kinds.
BEVIN BROS. MFG. CO., Bells, all kinds.
B. H. PARSONS & BRO., Flyers, Nippers, &c.
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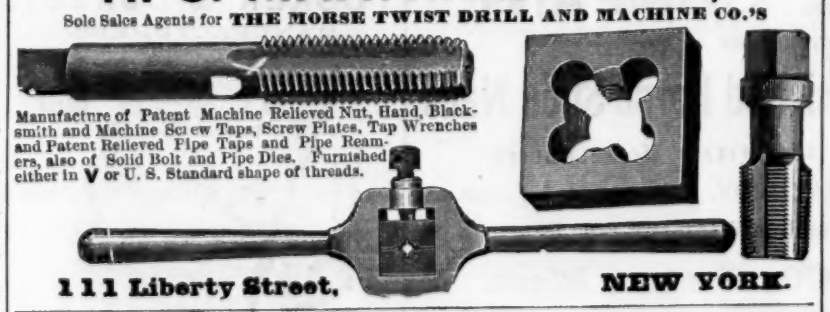

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1½	26.00	30.00	2.50	8.00
2	31.00	35.00	2.75	10.00
2¼	36.00	41.00	3.25	12.00
2½	40.00	45.00	3.50	14.00
2¾	45.00	51.00	3.75	16.00
3	50.00	57.00	4.25	19.00
3½	59.00	67.00	4.50	23.00
4	69.00	78.00	5.00	28.00
4½	80.00	90.00	5.50	34.00
5	90.00	101.00	6.00	40.00
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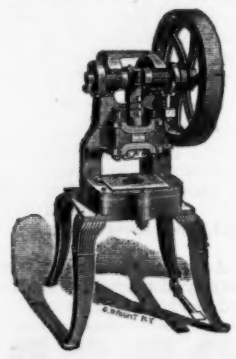

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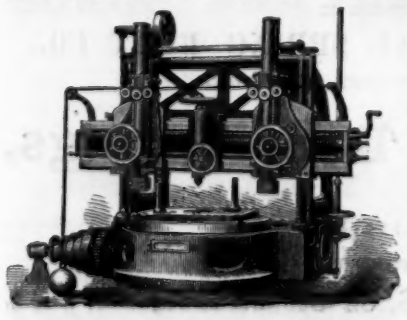

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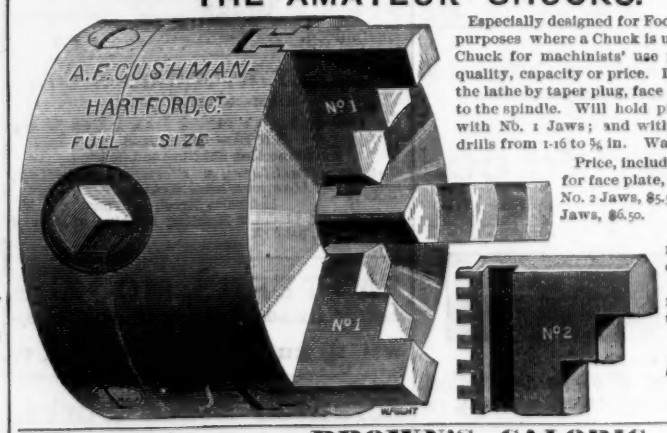

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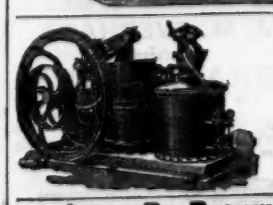

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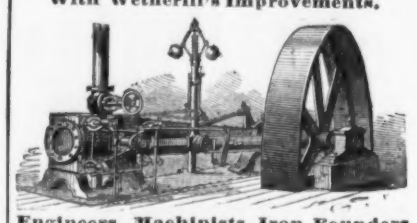

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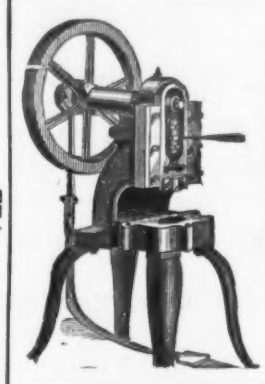

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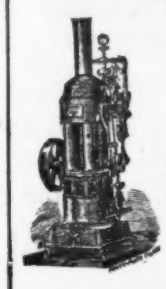

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